

PMOC REPORT

**OP 20 – Project Management Plan Review
OP 21 – Technical Capacity and Capability Review
OP 24 – QA/QC Review**

**Honolulu High-Capacity Transit Corridor Project
City and County of Honolulu
Honolulu, HI**

October 2011 (FINAL)

PMOC Contract Number: DTFT60-09-D-00012
Task Order Number 2: Honolulu
Work Order Number 2
Project No. DC-27-5140
OPs Referenced: OP 1, OP 20, OP 21, and OP 24

Jacobs Engineering Group, Inc., 501 North Broadway, St. Louis, MO 63102
Tim Mantych, P.E., (314) 335-4454, tim.mantych@jacobs.com
Length of Time Assigned: September 24, 2009 through November 17, 2014

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The City and County of Honolulu (“grantee”) is requesting to enter into Final Design for the Honolulu High-Capacity Transit Corridor (HHCTC) Project (“Project”) in accordance with the Federal Transit Administration (FTA) New Starts requirements. The Project is intended to provide improved mobility in the highly-congested east-west corridor along Oahu’s south shore between Kapolei and the Ala Moana Center. The Project would provide faster, more reliable public transportation services than those currently operating in mixed-flow traffic.

FTA assigned Jacobs as PMOC for the Project on September 24, 2009, for the purpose of monitoring the Project and providing FTA with “information and well-grounded professional opinions regarding the reliability of the project scope, cost, and schedule” of the Project. That effort continues with this report, which represents the PMOC’s (Jacobs) assessment of the grantee’s Project Management Plan, Technical Capacity and Capability and QA/QC Plan.

1.2 Project Description

The Project is an approximately-20-mile-long elevated fixed guideway rail system along Oahu’s south shore between East Kapolei and Ala Moana Center. The alignment is elevated, except for a 0.6-mile at-grade portion at the Leeward Community College station. The proposed investment includes 21 stations (20 aerial and 1 at-grade), 80 “light metro” rail transit vehicles, administrative/operations facilities, surface and structural parking, and maintenance facilities. The grantee plans to deliver the Project in four guideway segments:

- Segment I (West Oahu/Farrington Highway) – East Kapolei to Pearl Highlands (6 miles/7 stations)
- Segment II (Kamehameha Highway) – Pearl Highlands to Aloha Stadium (4 miles/2 stations)
- Segment III (Airport) – Aloha Stadium to Middle Street (5 miles/4 stations)
- Segment IV (City Center) – Middle Street to Ala Moana Center (4 miles/8 stations)

Additional Project information:

- **Additional Facilities:** Maintenance and Storage Facility (MSF) and parking facilities
- **Vehicles:** 80 vehicles, supplied by the Core Systems Contractor (CSC), which is also responsible for systems design and construction and operations. The CSC is a Design-Build-Operate-Maintain (DBOM) contract.
- **Ridership Forecast:** Weekday boardings – 97,500 (2019); 116,300 (2030).
- **Base Cost Estimate (BCE):** \$5.213 Billion in Year-of-Expenditure (YOE) dollars, including \$865.58 million in allocated and unallocated contingency and \$230 million financing costs.
- **Target Revenue Service Date (RSD):** March 2019

1.3 PMOC Scope of Work

Under this Work Order, Jacobs is to provide the following deliverables per the corresponding FTA Oversight Procedure (OP):

Table 1. PMOC Deliverables

OP	Description	Note
OP 20	Project Management Plan Review	Included within this report
OP 21	Technical Capacity and Capability Review	Included within this report
OP 22	Safety and Security Management Plan Review	Submitted as separate stand-alone report
OP 23	Real Estate Acquisition and Management Plan Review	Submitted as separate stand-alone report
OP 24	QA/QC Review	Included within this report
OP 27	Before and After Study Plan Review	Submitted as separate stand-alone report
OP 37	Fleet Management Plan Review (Bus)	Submitted as separate stand-alone report
OP 37	Fleet Management Plan Review (Rail)	Submitted as separate stand-alone report
OP 38	Bus and Rail Vehicle Technical Review	Submitted as separate stand-alone report

1.4 OP 20: Project Management Plan Review

The PMOC followed the requirements outlined in the *FTA OP 20 – Project Management Plan Review*, dated May 2010, to assess and evaluate the grantee's Project Management Plan, Revision 4 dated April 2011.

Summary of Findings

Through review of the grantee's PMP, the PMOC was able to assess the ability of the grantee and its project management approach to take the project successfully from entry to Final Design through award of the Full Funding Grant Agreement (FFGA). In addition, the PMOC finds that the PMP at this phase demonstrates a well conceived plan for project bidding and construction.

The PMOC has summarized its findings and opinions and present recommendations with respect to the adequacy and soundness of the grantee's plans and procedures for:

- NEPA coordination. The PMOC reviewed the grantee's Mitigation Monitoring Program that has been developed for managing and implementing mitigation actions into the design documents, cost estimates and schedules and has no further comments.
- Design control. The grantee has established and is implementing the plans and procedures for design control including reviews for design, value engineering, life-cycle cost considerations, constructability, and safety.
- Project controls. The PMOC reviewed the grantee's baselines for capital cost estimate and schedule. The grantee has accepted the PMOC recommendation of combining all various schedules into one all encompassing schedule file, thus creating a true MPS. The Scheduling Procedures and PMP require revision to address any Schedule Breakdown Structure changes. The grantee's approach and plans for risk identification, assessment, and mitigation, and the development of adequate contingencies are acceptable.
- Project Delivery and Procurement. The PMOC reviewed the grantee's contracting plan for project delivery and procurement and evaluated the soundness and adequacy of the its approach to bidding and awarding of contracts, procurement of materials, equipment and vehicles, and the construction administration and construction management of the

Project, and the PMOC has no further comments. The selected project delivery methods and contract packaging strategies are reflected in project schedules and cost estimates.

- PMP Sub plans. The PMOC reviewed the adequacy and soundness of the grantee's PMP sub plans, including the grantee's Technical Capacity and Capability, Quality Assurance/Quality Control, Safety and Security Management Plan, Real Estate Acquisition Management Plan, and Bus and Rail Fleet Management Plans. The PMOC analyzed these sub plans and has made several suggestions for their improvement to the grantee, along with recommendations for resolving issues surrounding the development and implementation of these plans.

Conclusion

While PMP revisions will be necessary prior to the FFGA, the PMP is generally a well written and thorough document that satisfies the FTA requirements for a project entering the Final Design phase. The PMOC recommends that PMP Revision 4, dated April 2011 be approved as a deliverable for entering Final Design.

Recommendations

There are no recommendation conditions that should be addressed by the grantee prior to entry into Final Design phase.

The grantee continues to advance several areas of the project as it prepares to move into Final Design and construction. Because of the most recent updates to the project delivery method, revisions to the organizational chart due to staff changes, and concerns with grantee staff transition, further development of the PMP in the following areas will be required during the Final Design phase of the project:

- (1) Update the Staffing Plan and revisions to the organization chart due to the creation of HART, changes in PMC positions and grantee staff, and to adherence to the expectation of transitioning of PMC staff to grantee staff during the Final Design and construction phase of the Project.
- (2) Update Figure 6 – Final Design Organization Chart of the PMP to include the Project Labor Agreement (PLA) Officer, Legal Counsel, and General Engineering Consultant (GEC) Safety and Security personnel positions that are currently unfilled.
- (3) Update Figure 6 – Final Design Organization Chart of the PMP to add positions to the organization chart recommended by the PMOC in OP 21 section of this report.
- (4) Update the PMP to address the new transit authority in detail since it commenced operations on July 1, 2011.
- (5) Expand the Construction Management and Testing and Start-Up sections during Final Design, as the requirements and the processes are further defined.
- (6) Develop the DBB Resident Engineer and Inspection Manual prior to the start of the DBB construction contracts.

1.5 OP 21: Technical Capacity and Capability Review

The PMOC followed the requirements outlined in the *FTA OP 21 – Technical Capacity and Capability Review*, dated May 2011, to assess and evaluate the grantee's technical capacity and capability.

Conclusion

It is the PMOC's professional opinion that the grantee has demonstrated its Technical Capacity and Capability to execute the project during the Preliminary Engineering phase and its readiness to enter the Final Design phase. Nevertheless, the PMOC has identified several recommendations the grantee must address. The recommendations are organized by the timeframe in which they must be addressed: prior to Final Design; or during Final Design.

Recommendations

There are no recommendation conditions that should be addressed by the grantee prior to entry into Final Design phase.

The following Recommendations can be addressed during the Final Design phase:

- (1) The grantee should provide direct support to the Executive Director through a Deputy (or a combination of executive managers). This recommendation should be addressed following identification of a permanent Executive Director.
- (2) The grantee should develop a succession plan for those key management positions that may be considered short term (three years or less) in order to ensure a successful "knowledge transfer" of project consultants' expertise to the grantee. The Succession Plan can be developed during the Final Design phase but before FFGA application preparation and should be directly associated with the grantees staffing plan.
- (3) The PMP, companion documents, and Project Control procedure documents must use consistent and traceable vernacular such as correct position titles, deliverable document titles, procedure titles, etc. These changes can be made in subsequent document revisions during the Final Design phase but prior to FFGA application activities.
- (4) The grantee should hire a recruiting consultant to assist with staffing plan, recruiting, training, transition planning and execution, and employee retention.
- (5) The grantee should develop a Project Responsibility Assignment Matrix (RAM) similar to Figure 7 in the PMP in order to better document and clarify the roles and responsibilities, functions, and interface required among the blended organization of city department, city Project, and consultant staff.
- (6) The grantee should hire a real estate acquisition consultant to meet peak resource demands and provide expert consultant advice as needed.
- (7) The grantee should ensure that a separate and distinct group within the GEC is utilized to perform the reviews for building code and ADA compliance to streamline the permit process.

Table 2 summarizes the PMOC findings and recommendations with regard to staffing requirements for the Project.

Table 2. Staffing Requirements

Position	Grantee or Consultant	Date Required
Deputy Executive Director	Grantee	After permanent Exec. Director is identified
Deputy Director of Finance	Grantee	After permanent Exec. Director is identified
Claims Avoidance and Dispute Resolution (claims) Specialist	Grantee or Consultant	Prior to start of construction
Project Labor Agreement Officer (key management)	Grantee	Prior to start of construction
Contract Officer (key management for Procurement/Contract Officer)	Grantee	Prior to start of construction
Design Build Contract Administrator (support staff for Procurement/Contract Officer)	Grantee or Consultant	Prior to start of construction
Design Contract Administrator (support staff for Procurement/Contract Officer)	Grantee or Consultant	Prior to start of construction
Procurement/Contract Assistant (support staff for Procurement/Contract Officer)	Grantee or Consultant	Prior to start of construction
Senior Clerk (support staff for Administration Services Officer)	Grantee or Consultant	Prior to start of construction
CMS Programmer/Data Administrator (support staff for Senior Project Controls Analyst)	Grantee or Consultant	Prior to start of construction
Senior Scheduler (support staff for Senior Scheduling Manager)	Grantee or Consultant	Prior to start of construction

1.6 OP 24: QA/QC Review

The PMOC followed the requirements outlined in the *FTA OP 24 – QA/QC Review*, dated May 2010, to assess and evaluate the grantee’s Quality Management Plan (QMP), Revision 0 dated January 11, 2011. The objective of this review is to assess and evaluate the adequacy and soundness of the grantee’s QA/QC program and the grantee’s implementation of such program over the course of the Project.

Conclusion

The PMOC recommends the QMP Revision 0, dated January 11, 2011 be accepted as a deliverable for entering Final Design.

Recommendations

There are no recommendation conditions that need to be addressed by the grantee prior to entry into Final Design phase.

The PMOC recommends the following items be addressed during the next update of the QMP, which can be developed during Final Design:

- (1) Clarification should be added to the QMP regarding the utilization and maintenance of the “Review Comments Log” and the “Change Management Log” with respect to tracking design changes.
- (2) The “Project Wide Document Control Procedure” should reference and apply to all documents for the Project, not just those documents required in the QMP.
- (3) The QMP should define the process by which the Deputy Chief Project Officer of

Engineering and Construction (DEC) will verify that the identification and control of materials, parts, and components are performed during design, construction, and testing.

- (4) The grantee should add requirements to the QMP regarding products and materials that will be turned over to the owner at the conclusion of the project.

1.7 Conclusion

Based on a review of the Project Management Plan, Technical Capacity and Capability, and Quality Management Plan, the PMOC recommends that the grantee be allowed to progress into Final Design. While this report also presents numerous other suggestions or requirements for grantee activities that should or must be performed during Final Design, those concerns are not, in themselves, grounds for delaying entry into Final Design.

2.0 INTRODUCTION

Report Date	October 27, 2011 (FINAL)
Project Name / Location	Honolulu High-Capacity Transit Corridor Project Honolulu, Hawaii
Project Sponsor	City and County of Honolulu
Project Management Oversight Contractor (PMOC) firm	Jacobs Engineering Group Inc.
Person providing this report	Tim Mantych, PE (MO, IL)
Length of time PMOC has been assigned to this project:	Since September 24, 2009

The Federal Transit Administration (FTA) has contracted Jacobs to provide Project Management Oversight Contractor (PMOC) services on FTA's New Starts and major capital projects. This Task Order provides FTA's Office of Program Management (TPM) in Washington, DC with Project Management Oversight services for programmatic services and products for contract level plans, quality management systems and reporting, white papers, ancillary support, information technology services and status reporting. Subject to the issuance of individual Work Orders by the Contracting Officer's Technical Representative, the Contractor also provides PMO services for FTA's Regional Offices' grantees and their major capital projects to the extent that the PMOC has no conflicts of interest.

FTA assigned Jacobs as a PMOC for the City and County of Honolulu's ("grantee") Honolulu High-Capacity Transit Corridor Project ("Project") on September 24, 2009, for the purpose of monitoring the Project and providing FTA with "information and well-grounded professional opinions regarding the reliability of the project scope, cost, and schedule" of the Project. That effort continues with this report, which represents the PMOC's (Jacobs) assessment of the grantee's Project Management Plan, Technical Capacity and Capability and QA/QC Plan.

2.1 Project Sponsor

The City and County of Honolulu ("grantee") is sponsoring the Honolulu High-Capacity Transit Corridor (HHCTC) Project ("Project").

2.2 Project Description

The proposed Project is a 20.5-mile light metro rail line in a grade-separated right-of-way that will provide high-capacity transit service on the island of Oahu from East Kapolei in the west to the Ala Moana Center in the east. The alignment is elevated except for a 0.6-mile at-grade portion adjacent to the Leeward Community College station. In addition to the guideway superstructure and trackwork, major physical elements of the Project include: 21 stations; one maintenance and storage facility; numerous right-of-way parcel acquisitions; and 80 "light metro" vehicles and associated core systems.

The Project is planned to be delivered in four design and construction segments:

- Segment I (West Oahu/Farrington Highway) – East Kapolei to Pearl Highlands (6 miles/7 stations)

- Segment II (Kamehameha Highway) – Pearl Highlands to Aloha Stadium (4 miles/2 stations)
- Segment III (Airport) – Aloha Stadium to Middle Street (5 miles/4 stations)
- Segment IV (City Center) – Middle Street to Ala Moana Center (4 miles/8 stations)

East Kapolei is the western terminus of the Project. The alignment begins at North-South Road north of Kapolei Parkway. The alignment follows North-South Road in a northerly direction to Farrington Highway where it turns east following Farrington Highway and crosses Fort Weaver Road. The alignment is elevated along North-South Road and along Farrington Highway. The alignment continues in a north-easterly direction following Farrington Highway in an elevated structure. South of the H-1 Freeway, the alignment descends to grade as it runs alongside the Maintenance & Storage Facility at the former Navy Drum Site. The alignment continues at-grade to Leeward Community College and then returns to an elevated configuration to cross over the H-1 Freeway. North of the Freeway, the alignment turns eastward along Kamehameha Highway. Segment I includes seven stations: East Kapolei, University of Hawaii at West Oahu, Ho’opili, West Loch, Waipahu Transit Center, Leeward Community College and Pearl Highlands.

Segment II carries the alignment from Pearl Highlands to Aloha Stadium, running mostly above the median of Kamehameha Highway. At the highway interchange ‘Ewa of the stadium, the alignment crosses over to the Mauka side of Kamehameha Highway, in land adjacent to the roadway that is currently used for stadium parking. Segment II includes two stations: Pearl Ridge and Aloha Stadium. East of Aloha Stadium Station, the segment features a third track for temporary train layovers or storage.

The Airport Segment, or Segment III, takes the alignment from Aloha Stadium to Middle Street. This entirely elevated section of the route starts on the Mauka side of Kamehameha Highway, then transitions to the median of that street. As the route proceeds in the Koko Head direction, it leaves Kamehameha Highway to run on the Makai side of the elevated H-1 Freeway. At Honolulu International Airport, the alignment swings out over the median of the H-1, then down Aolele Street to a station site adjacent to the main airport terminal. The route then continues Koko Head on Aolele and, eventually, the parallel Ualena Street to Lagoon Drive. At that point, the alignment crosses a corner of Ke’ehi Lagoon Park and threads through another highway interchange to Kamehameha Highway again at Middle Street. Segment III includes four stations: Pearl Harbor, Airport, Lagoon Drive, and Middle Street.

The City Center Segment, Segment IV, is also entirely-elevated as it carries the alignment from Middle Street to the Ala Moana Center. Segment IV features guideway structures above Dillingham Boulevard, Nimitz Highway, Halekauwila Street, Queen Street, and Kona Street. Above Kona Street at the Ala Moana Center Station, the segment includes a third track to serve that station, which serves as the eastern terminus of the initial system. The segment includes eight stations: Kalihi, Kapalama, Iwilei, Chinatown, Downtown, Civic Center, Kaka’ako, and Ala Moana.

The Project also includes one Maintenance & Storage Facility (MSF), two park and ride lots, one park and ride structure and two bus transit centers. The rail vehicles will be fully-automatic and driverless.

The anticipated weekday boardings for the line are as follows:

- 97,500 (in 2019)
- 116,300 (in 2030)

2.3 Project Status

A Locally Preferred Alternative (LPA) was adopted in July 2008. The grantee was provided approval to begin Preliminary Engineering (PE) on October 16, 2009. The Final Environmental Impact Statement (FEIS) was published on June 25, 2010, and a Record of Decision (ROD) was issued on January 18, 2011. The grantee is preparing to request approval to enter into Final Design for the Project in accordance with the FTA New Starts requirements.

2.4 Project Budget

The grantee's Base Cost Estimate (BCE), dated March 25, 2011, is \$5.213 billion in Year-of-Expenditure (YOE) dollars, including \$865.58 million in allocated and unallocated contingency and \$230 million financing costs. The YOE budget for the project, including allocated and unallocated contingency, is shown in the following table.

Table 3. 2011 SCC Estimate

SCC	Description	YOE \$	
		Total (Incl. Cont.)	Contingency
10	Guideway & Track Elements (Route Miles)	1,308,357,000	190,536,000
10.04	Guideway: Aerial structure	1,210,392,000	178,396,000
10.08	Guideway: Retained cut or fill	7,401,000	965,000
10.09	Track: Direct fixation	85,256,000	10,403,000
10.11	Track: Ballasted	3,102,000	404,000
10.12	Track: Special (switches, turnouts)	2,204,000	366,000
20	Stations, Stops, Terminals, Intermodals	614,602,000	103,170,000
20.01	At-grade station	8,345,000	1,418,000
20.02	Aerial station	449,606,000	75,779,000
20.06	Automobile parking multi-story structure	77,918,000	12,853,000
20.07	Elevators, escalators	78,732,000	13,117,000
30	Support Facilities: Yards, Shops, Admin.	103,805,000	11,942,000
30.02	Light Maintenance Facility	8,511,000	979,000
30.03	Heavy Maintenance Facility	42,778,000	4,921,000
30.04	Storage or Maintenance of Way Building	8,741,000	1,005,000
30.05	Yard and Yard Track	43,774,000	5,035,000
40	Sitework & Special Conditions	1,021,457,000	153,475,000
40.01	Demolition, Clearing, Earthwork	19,916,000	2,679,000
40.02	Site Utilities, Utility Relocation	358,376,000	67,161,000
40.03	Haz. mat'l, contam'd soil removal/ mitigation	7,533,000	811,000
40.04	Environmental mitigation	30,802,000	4,078,000
40.05	Site structures (retaining walls, sound walls)	22,935,000	3,159,000
40.06	Pedestrian / bike access, landscaping	44,675,000	7,136,000
40.07	Automobile, bus accessways (roads, parking)	212,928,000	31,598,000
40.08	Temporary Facilities/other indirect costs	324,289,000	36,849,000
50	Systems	251,586,000	28,379,000
50.01	Train control and signals	92,601,000	9,921,000
50.02	Traffic signals and crossing protection	13,043,000	2,315,000
50.03	Traction power supply: substations	33,800,000	3,632,000
50.04	Traction power distribution	37,347,000	4,489,000
50.05	Communications	60,602,000	6,499,000
50.06	Fare collection system and equipment	10,324,000	1,106,000
50.07	Central Control	3,868,000	414,000
	CONSTRUCTION SUBTOTAL (10 - 50)	3,299,809,000	487,504,000

(Table Continued below)

SCC	Description	YOE	
		Total (Incl. Cont.)	Contingency
60	ROW, Land, Existing Improvements	247,942,000	70,840,000
60.01	Purchase or lease of real estate	224,649,000	64,185,000
60.02	Relocation of existing households/businesses	23,293,000	6,655,000
70	Vehicles	212,461,000	22,763,000
70.01	Light Rail	191,657,000	20,534,000
70.06	Non-revenue vehicles	14,589,000	1,563,000
70.07	Spare parts	6,214,000	665,000
80	Professional Services	1,031,047,000	92,821,000
80.01	Preliminary Engineering	58,996,000	4,756,000
80.02	Final Design	222,177,000	22,403,000
80.03	Project Management for Design/Construction	350,329,000	28,507,000
80.04	Construction Administration & Management	187,914,000	17,083,000
80.05	Professional Liability/Non-Construction Ins.	56,103,000	5,100,000
80.06	Legal; Permits; Review Fees by other agencies	69,918,000	6,355,000
80.07	Surveys, Testing, Investigation, Inspection	6,072,000	527,000
80.08	Start up	79,534,000	8,088,000
	SUBTOTAL (10 - 80)	4,791,260,000	673,930,000
90	Unallocated Contingency	191,650,000	191,650,000
	SUBTOTAL (10 - 90)	4,982,910,000	865,580,000
100	Finance Charges	230,000,000	0
	TOTAL PROJECT COST (10 - 100)	5,212,910,000	865,580,000

2.5 Project Schedule

Table 4 presents the grantee's target dates for key milestones of this New Starts Project as identified in its Master Project Schedule (MPS).

Table 4. Target Milestone Dates

Milestone Description	Grantee Target Date
FTA Approve Entry into Final Design	14-Nov-11
FTA Award Full Funding Grant Agreement	01-Aug-12
WOFH/KH Revenue Service	27-Dec-15
Airport Segment Revenue Service	29-Oct-17
City Center Revenue Service	20-Sep-18
Grantee FFGA Revenue Service Date	17-Jun-19

Note: MPS Data Date of September 30, 2011

2.6 Project Background

The grantee is preparing to request approval to enter into Final Design for the Project in accordance with the FTA New Starts requirements. The Project is intended to provide improved mobility in the highly-congested east-west corridor along Oahu's south shore. The Project would provide faster, more reliable public transportation services than those currently operating in mixed-flow traffic.

The Alternatives Analysis (AA) for the Project was presented to the Honolulu City Council in October 2006. The purpose of the report was to provide the City Council with the information

necessary to select a mode and general alignment for high-capacity transit service on Oahu. The report summarized the results of the AA that was conducted following the FTA's planning guidance. The report provided information on the costs, benefits, and impacts of four alternatives:

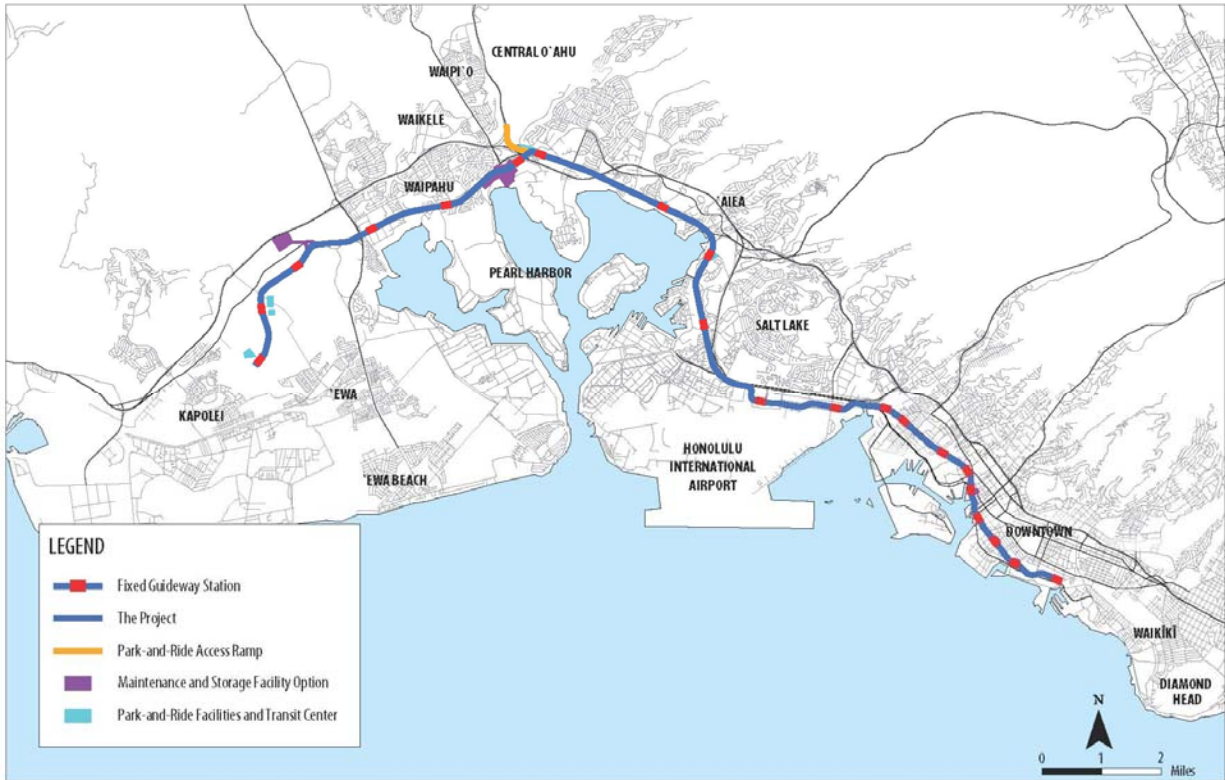
- No Build Alternative
- Transportation Systems Management Alternative
- Managed Lane Alternative
- Fixed Guideway Alternative

2.7 Project History

Following is a list of important dates in the history of the Project:

- August 2005 – AA is begun.
- October 2006 – AA Report presented to the Honolulu City Council.
- November-December 2006 – Public Meetings discussing the AA.
- December 22, 2006 – Honolulu City Council enacts Ordinance No. 07-001, which approved a fixed guideway alternative from Kapolei to the UH Manoa and Waikiki as the Locally Preferred Alternative (LPA) for the Project.
- January 1, 2007 – A 0.5% surcharge on the Hawaii General Excise Tax (GET) went into effect (until December 31, 2022).
- February 27, 2007 – Honolulu City Council approved as the Minimum Operable Segment (MOS), East Kapolei to Ala Moana Center, via Salt Lake Boulevard (Resolution 07-039, FD1(c)).
- July 1, 2007 – The City created the Rapid Transit Division (RTD) within the Department of Transportation Services (DTS) through enactment of the City's Fiscal Year 2008 Executive Operating Budget and Program.
- August 24, 2007 – The City executed a GEC contract for \$85 million to perform National Environmental Policy Act (NEPA) documentation, AA, and PE activities.
- February 22, 2008 – The City's Technology Selection Panel recommended the use of steel-wheel on steel-rail technology based on request for information industry responses submitted in January. Subsequently, Mayor Hannemann directed DTS to base the DEIS on steel-wheel on steel-rail technology.
- September 2008 – Pre- PE Risk Assessment performed for Salt Lake Alternative.
- November 2008 – A ballot measure was passed that, in part, approved the development of a "steel wheel on steel rail" transit system for the City of Honolulu.
- January 28, 2009 – City Council voted to revise the MOS alignment to the Airport Alternative.
- May 2009 – Request to Enter PE submitted.
- June 2009 – Pre-PE Risk Assessment performed for Airport Alternative.
- October 12, 2009 – FTA grants Entry into PE.
- June 25, 2010 – FEIS published.
- December 16, 2010 – FEIS approved by Governor of Hawaii.
- January 18, 2011 – Project receives ROD from FTA.
- July 1, 2011 – Honolulu Authority for Rapid Transportation (HART) became effective.

Figure 1. Project as Identified in FEIS



Following is a summary of the proposed Project component characteristics at the time this PMOC Report was prepared:

Guideway

- Exclusive guideway:
 - Majority of guideway will be elevated structure consisting of concrete box sections
 - 0.6-mile at-grade section in location of M will include no grade crossings
- Double-track mainline
- Maximum speed: 55 miles per hour (mph)
- Crossovers spaced at approximately 2 miles
- Third Track at Aloha Stadium Station
- Third Track at Ala Moana Station

Stations

- 20 aerial stations (13 with concourses)
- One at-grade station (access from below platform circulation space)
- Station length: 240 feet
- Barrier-free

Maintenance and Storage Facility

- Initial construction will accommodate 80 revenue vehicles

- Maximum capacity of site is 150 revenue vehicles
- Yard movements will be manually controlled, except for departure/receiving tracks
- Shop Facility will include administrative and operational offices for the agency, including Operations Control Center (OCC)
- Facility will be designed and commissioned to achieve Leadership in Energy and Environmental Design Green Building Rating System Silver Certification, and will be operated in accordance with FTA Sustainable Maintenance and Operational Standards

Revenue Vehicles

- Heavy rail
- Approximate number of vehicles: 80
- Standard gauge, steel wheel on steel rail
- Fully automated, manual operation possible (hostler panel)
- Nominal vehicle dimensions:
 - Length: 64 feet
 - Width: 10 feet
 - Height: Up to 13.3 feet
 - Floor Height: 3.77 feet above top of rail (at entry)
- Nominal Passenger Capacity: 190 per vehicle (AW2 load)
- Electric traction via third rail, nominal 750V direct current (DC) supply, all axles powered
- Semi-permanently coupled, bi-directional trainsets
- Wide gangways between end and middle cars
- 2 to 3 double passenger plug doors per side (per car)
- Manual crew doors with steps
- Dynamic / regenerative braking
- Alternating current (AC) propulsion
- 30+ year design life

Systems

- Traction power
 - Distribution system will consist of substations and main line track power distribution facilities
 - Approximately 20 Traction Power Substations will be spaced at approximately one mile intervals along the alignment with ratings in the range of 2 megawatt (MW) to 5 MW
 - Power distribution system will be based on a 750-volt direct current (DC) third rail system
- Train control
 - Automatic train control technology
 - Driverless train operation
 - Two-minute Design Headway
 - Bi-directional operation
 - Fall-back manual train operation
 - Parallel and branch main lines

- Mid-line Maintenance and Storage Facilities
- Accurate station stopping
- Operations Control Center
- Communications
 - Supervisory Control and Data Acquisition System
 - Optical Fiber Transmission System
 - Radio System
 - Telephone System
 - Public Address System
 - Variable Message Sign System
 - Closed Circuit Television System
 - Fire and Intrusion Alarm Systems
 - Maintenance Management Information System
- Fare Collection
 - Fare system will be integrated with the fare structure on the City's existing bus system
 - Proof of payment system

2.8 Project Management Oversight Contractor (PMOC)

Under this Work Order, Jacobs is to provide the following deliverables:

Table 5. PMOC Deliverables

OP	Description	Note
OP 20	Project Management Plan Review	Included within this report
OP 21	Technical Capacity and Capability Review	Included within this report
OP 22	Safety and Security Management Plan Review	Submitted as separate stand-alone report
OP 23	Real Estate Acquisition and Management Plan Review	Submitted as separate stand-alone report
OP 24	QA/QC Review	Included within this report
OP 27	Before and After Study Plan Review	Submitted as separate stand-alone report
OP 37	Fleet Management Plan Review (Bus)	Submitted as separate stand-alone report
OP 37	Fleet Management Plan Review (Rail)	Submitted as separate stand-alone report
OP 38	Bus and Rail Vehicle Technical Review	Submitted as separate stand-alone report

2.9 PMOC Evaluation Team

The following table presents the PMOC Evaluation Team and the respective roles associated with the assessment of the Project.

Name	Location	Phone	Email Address	Role
Jacobs				
Tim Mantych	St. Louis, MO	314-335-4454	tim.mantych@jacobs.com	Program Manager
Bill Tsiforas	Las Vegas, NV	702-676-1568	William.tsiforas@jacobs.com	Task Order Manager
Keith Konradi	St. Louis, MO	314-335-4464	Keith.konradi@jacobs.com	Rail Engineering
Bob Niemietz	St. Louis, MO	314-335-4484	Robert.niemietz@jacobs.com	Structural Engineering
Ahmad Hasan	St. Louis, MO	314.335.4103	Ahmad.hasan@jacobs.com	Geotechnical Engineering
Allan Zreet	Dallas, TX	214-424-8511	Allan.zreet@jacobs.com	Architect
Greg Crocombe	Houston, TX	832-351-7271	Greg.crocombe@jacobs.com	Systems (Train Control)
Charles Neathery	Dallas, TX	214-424-7519	Charles.neathery@jacobs.com	Construction Management, Project Controls, Schedule Risk Assessment
Sabit Ghosh	Arlington, VA	410-837-5840	Sabit.ghosh@jacobs.com	Construction Management
Tim Morris	Dallas, TX	214-424-7506	Tim.morris@jacobs.com	Cost Estimating
Brian Carpenter	Dallas, TX	214-424-8530	brian.carpenter@jacobs.com	Cost Estimating, Scheduling
Steve Rogers	Dallas, TX	214-424-7522	Steve.rogers@jacobs.com	Cost Estimating
Albert Amos	Austin, TX	512-314-3122	Alber.amos@jacobs.com	Economics
David Nelson	Boston, MA	617-242-9222	David.nelson@jacobs.com	Operations, Transit Capacity
Tracey Lober	St. Louis, MO	314-335-4219	Tracey.lober@jacobs.com	QA/QC
Joe Leindecker	St. Louis, MO	314-335-4077	Joe.leindecker@jacobs.com	Planning
Virginkar and Associates, Inc.				
Arun Virginkar	Brea, CA	714-993-1000	virginkar.arun@va-inc.com	Vehicle Engineer, Buy America
Hal Edris	Spring Grove, PA	717-225-9630	edris.hal@va-inc.com	Systems Integration Manager
Triunity Engineering Management Inc.				
Jonnie Thomas	Denver, CO	303-953-0320	jonnie.thomas@triunityeng.com	Systems (Communications)
Interactive Elements Inc.				
Dennis Newman	New York, NY	212-490-9090	anoldsaw@aol.com	Safety
Dorothy Schulz	New York, NY	212-490-9090	dms10024@aol.com	Security
LS Gallegos				
JR Casner	Centennial, CO	303-790-8474	hcasner@lsgallegos.com	Construction Management, QA/QC
OR Colan & Associates				
Bob Merryman	St. Louis, MO	636-949-2125	rmerryman@orcolan.com	Real Estate
Kowalenko Consulting Group Inc.				
Emma Kowalenko	Chicago, IL	312-853-0500	ekowalenko@kowalenkogroup.com	Planning/Environmental
Independent Contractor				
David Sillars	Corvallis, OR	541-737-8058	dsillars@sillars.com	Risk Manager

2.10 Documents Reviewed

Appendix B provides a listing of the project-related documents that were utilized during development of this PMOC Report.

3.0 OP 20: PROJECT MANAGEMENT PLAN REVIEW

3.1 Project Management Plan Review

The Federal Transit Administration (FTA) requires that grantees develop and implement a written Project Management Plan (PMP) for any major capital project funded by FTA. Specifically, Title 49 of the United States Code Section 5327 of Chapter 53, entitled Project Management Oversight (PMO) requires a PMP as a condition of Federal financial assistance for major capital projects. The required elements of a PMP are stipulated in the Code of Federal Regulations:

Title 49 – Transportation
Part 633 – Project Management Oversight
Subpart C – Project Management Plans
Section 633.25 – Contents of a Project Management Plan

Moreover, the grant applicant must agree to carry out the PMP approved by FTA. The PMP is a dynamic document for managing the engineering, design, construction, and start-up phases of a project. Periodic updating is expected as the grantee implements the project.

At a minimum, 49 Code of Federal Regulations (CFR) Part 633 requires that a recipient's PMP include the following items:

- (1) A description of adequate recipient staff organization, complete with well-defined reporting relationships, statements of functional responsibilities, job descriptions, and job qualifications
- (2) A budget covering the project management organization, appropriate consultants, property acquisition, utility relocation, systems demonstration staff, audits, and such miscellaneous costs as the recipient may be prepared to justify
- (3) A design management process encompassing Preliminary Engineering and Final Design
- (4) A construction schedule
- (5) A document control procedure and record-keeping system
- (6) A change order procedure which includes a documented, systematic approach to the handling of construction change orders
- (7) A description of organizational structures, management skills, and staffing levels required throughout the construction phase
- (8) Quality control and quality assurance programs
- (9) Material testing policies and procedures
- (10) Plan for internal reporting requirements including cost and schedule control procedures
- (11) Criteria and procedures to be used for testing the operational system or its major components;
- (12) Periodic updates of the Plan
- (13) The recipient's commitment to make monthly submission of project budget and project schedule to the Secretary

Additional requirements are outlined in Section 633.27 of 49 CFR 633 (Subpart C) regarding the implementation of a project management plan as follows:

- (a) Upon approval of a project management plan by the Secretary the recipient shall begin implementing the plan.
- (b) If a recipient must modify an approved project management plan, the recipient shall submit the proposed changes to the Secretary along with an explanation of the need for the changes.
- (c) A recipient shall submit periodic updates of the project management plan to the Secretary that include, but are not be limited to, the following:
 - (i) Project budget
 - (ii) Project schedule
 - (iii) Financing, both capital and operating
 - (iv) Ridership estimates, including operating plan
 - (v) Where applicable, the status of local efforts to enhance ridership when estimates are contingent, in part, upon the success of such efforts
- (d) A recipient shall submit current data on a major capital project's budget and schedule to the Secretary on a monthly basis.

The PMOC followed the requirements outlined in the *FTA OP 20 – Project Management Plan Review*, dated May 2010, to assess and evaluate the grantee's Project Management Plan, Revision 4, dated April 2011. This OP 20 review has been formatted to provide a brief description of each FTA requirement, the contents of the PMP that address the requirement, and the PMOC comments with regard to satisfying the requirement. The PMOC comments are compiled and presented in table format, which includes the comment type and corresponding PMP page and section numbers.

3.2 FTA References

The following are the primary references to Federal legislation, regulation, and guidance with which the PMOC conducted the Project Management Plan Review in accordance to the FTA OP 20:

- Legislative
 - The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), P.L. 109-59
- United States Code (USC)
 - FTA statutes, 49 USC Chapter 53
- Regulations
 - Project Management Oversight, 49 CFR Part 633
 - Major Capital Investment Projects, 49 CFR Part 611
 - Joint FTA/FHWA regulations, Metropolitan Planning, 23 CFR. Part 450
 - Joint FTA/FHWA regulations, Environmental Impact and Related Procedures, 23 CFR. Part 771
 - USDOT regulation, Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs, 49 CFR Part 24.
- FTA Circulars
 - C4220.1E, Third-Party Contracting Requirements

- C5010.1D, Grants Management Guidelines
- FTA Master Agreement
- C6800.1, Safety and Security Management Guidance for Major Capital Projects
- Guidance
 - *Guidance for Transit Financial Plans*, June 2000
 - Reporting Instructions for the Section 5309 New Starts Criteria
 - Interim Guidance on Design-Build
 - *Quality Assurance and Quality Control Guidelines*
 - *Project and Construction Management Guidelines*, 2003 Update
 - *Value Engineering Process Overview*, January 1998
 - Transit Cooperative Research Program (TCRP) G-08 – A Guidebook for the Evaluation of Project Delivery Methods

3.3 General Requirements of a Project Management Plan

3.3.1 Project Description

FTA Guidance

The narrative description of the Project should include a physical description of the Project and a discussion of those aspects of the Project's history and background that will contribute to understanding the Project's objectives and management strategies. Those aspects of other Projects that are dependent on or supportive of activities covered by the management plan also should be described. Also included should be a description of those portions of project planning, financing, design, acquisition (e.g., real estate, services, materials, and equipment), permitting, licensing, construction, and operations covered by the plan and the status of the Project at the time the plan is issued.

PMP

PMP Chapter 1.0 “*Project Management Plan Overview*” satisfactorily addresses this requirement. This chapter includes a brief description of the system and project as well as the background of the project, project participants (cooperative agencies), and a project map.

The procurement of eighty “light metro” automated rail vehicles is planned and will be further evaluated during the Final Design phase.

PMOC Assessment

The PMOC has determined that grantee has satisfactorily addressed this PMP requirement to a level detailed enough to support its request to enter the Final Design phase.

3.3.2 Physical Description and Function

FTA Guidance

System components should be described in terms of physical and functional requirements and overall design criteria. The conceptual design developed in the planning phase should set forth the intended performance characteristics of the completed project.

PMP

The Project Overview provides a detailed history and description of the project. It also explains the multiple entities involved in the project and adequately explains the interests for each party. A project map is included and notes the project is separated into four distinct segments:

- Segment I – East Kapolei to Pearl Highlands – DB
- Segment II – Pearl Highlands to Aloha Stadium – DB
- Segment III – Aloha Stadium to Middle Street Station – DBB
- Segment IV – Middle Street Station to Ala Moana Center – DBB

The successful bidder for the Core Systems Contract (CSC) is a joint venture led by two Italian firms (Ansaldo STS and AnsaldoBreda) controlled by Finmeccanica SpA of Rome. The Ansaldo Honolulu Joint Venture (AHJV) proposes to deliver vehicles, train control, traction power, communications, fare collection equipment, and operations and maintenance services for a City-specified rail transit system. The basic infrastructure (elevated guideway and stations) is to be built by others under different contracts with the City and County of Honolulu. AHJV proposes to install and operate vehicles and systems proven with several years of successful operation in Copenhagen, Denmark.

The selected transit technology is electrically powered, industry-standard steel wheel on steel rail powered from a third-rail system. The selected vehicle is to be capable of a top speed greater than 50 mph. The vehicles will be fully automated and driverless although train attendants are anticipated to be on the train during an initial burn-in period to provide the possibility of manual intervention in response to malfunctions. The driverless option is possible because the fixed guideway will operate in exclusive right-of-way with no automobile or pedestrian crossings.

The traction power distribution system consists of about 14 substations and main line track power distribution facilities. The substations are spaced at approximately one and one-half mile intervals along the alignment. The exact number of substations will be determined during Final Design.

Train signaling uses automatic train control (ATC) and automatic train operations (ATO) technology. The communications and security facilities include emergency phones, closed circuit television (CCTV), and public address and information display systems.

There will be approximately 80 guideway vehicles to accommodate 6,280 passengers per hour per direction in the initial years of operations. Additional vehicles will be added to the fleet as passenger demands require in the future. Up to 150 vehicles may be accommodated at the selected vehicle MSF.

It is the PMOC's professional opinion that the AHJV's proposal provides the physical and functional requirements for the systems portions of the CSC contract developed by the grantee. Although, the Signals, Communications, Traction Power, and Verification Testing and Acceptance/Safety and Security design are preliminary, further design development will be completed during Final Design to validate the performance criteria or operational requirements provided in the CSC.

PMOC Assessment

The PMOC has determined that grantee has satisfactorily addressed this PMP requirement to a level detailed enough to support its request to enter the Final Design phase.

3.4 Requirements of a Project Management Plan per 49 CFR 633

3.4.1 Organization and Staffing

FTA Guidance

Project organization charts showing the complete organization should be developed and should cover all project functions and all project personnel, regardless of affiliation. Staffing levels should be indicated. Charts may be time-oriented to show different organizational arrangements for different phases of the project. A responsibility matrix should be included.

Key personnel in all organizations should be identified and their principal duties, reporting relationships, job descriptions, job qualifications, and assigned responsibility and delegated authority should be defined.

PMP

The PMP Chapter 2 “*Project Organization and Staffing*” provides an overview of the management requirements and systems needed to efficiently and effectively implement the HHCTCP.

The PMP focuses on the management structure needed to assure that the Project has adequate organization, management skills, and staff to manage and implement this project. The project blends the strengths of the project participants, including the grantee, complemented by experienced members of a Project Management Consultant (PMC), and the General Engineering Consultant (GEC).

During the November 2010 election, an amendment to the Revised Charter of the City and County of Honolulu 1972 (as amended) was approved by voters to allow for the creation of a public transit authority. The new authority will be responsible for the planning, construction, operation, maintenance, and expansion of the grantee’s fixed guideway mass transit system. This authority, which is named the Honolulu Authority for Rapid Transportation (HART), became effective on July 1, 2011. Because of the election, the grantee has begun taking measures to fill the positions necessary to not only implement this Project but also to establish a new transit authority.

The grantee’s PMP Revision 4 dated April 2011, which supports its request to enter Final Design, only addresses the new transit authority in general terms. The grantee will require additional time to fully vet the impacts of a new authority on its staff and management approach. The grantee will revise the PMP to address the incorporation of HART since it was established on July 1, 2011.

PMOC Assessment

The PMOC has determined that grantee has satisfactorily addressed this PMP requirement to a level detailed enough to support its request to enter the Final Design phase.

During the PMOC Technical Capacity and Capability Review Assessment in January 2011, the PMOC utilized the project organizational chart and interviews with project staff to identify the staff members and consultants currently working on the project. The PMOC concentrated on the roles and responsibilities within the key project management staff. Because the blended project organization consists of several entities described above, the PMOC focused its review on organizational, responsibility, and functional relationships. The PMOC reviewed general procedures currently being implemented and discussed and general procedures proposed for the preliminary engineering and Final Design phase.

The PMOC has some concern that the grantee will encounter difficulty acquiring the experienced staff needed for the long-term assignment given Hawaii's higher than average cost of living and distance from the mainland. The PMOC is also concerned that, at present, the grantee does not have a staffing plan that addresses the transition of the positions currently held by the PMC to grantee staff, and the dates by which the grantee intends to staff each of the positions. In addition, the grantee will need to update the staffing plan after FTA approval to enter Final Design is granted to address the new transit authority in detail.

The PMOC recommends the grantee update the PMP to address the new transit authority in detail after July 1, 2011 and also update the Staffing Plan and revisions to the organization chart due to the creation of HART, changes in PMC positions and grantee staff, and to adherence to the transition of PMC staff to grantee staff during the Final Design and construction phase of the Project.

The PMP Revision 4 includes detailed organizational charts that adequately describe the current project team members, agencies and consultants required of the Project.

3.4.2 Budget

FTA Guidance

A budget covering the project management organization, appropriate consultants, property acquisition, utility relocation, systems demonstration staff, audits, and such miscellaneous costs as the recipient may be prepared to justify should be included in the PMP.

A system should be defined for comparing the actual project costs to the planned project costs of elements of work and for analyzing any variances from the planned costs that may occur.

PMP

The PMP addresses project budget and cost reporting in Chapter 3 "*Management Control*".

The budget was initially established during the planning phase. The budget covers all aspects of the work and was initially based on the estimates developed during AA. These estimates were refined during preliminary engineering and the budget reflected above was established for the FEIS.

The grantee has established general guidelines for uniform and consistent cost estimating during planning, design, and construction that will provide decision makers with reliable and accurate cost estimates during Final Design. Project procedure 4.PC-06 Cost Estimating, which is referenced in the PMP, describes the development and management that applies to all cost estimates required to establish Project and Contract Budgets. In addition, Project procedure 4.PC-07 Cost Control, also referenced in the PMP, describes the baseline cost estimate used to develop the financial plan that is to be submitted to FTA for approval at each project milestone (e.g., entrance into PE, entrance into Final Design, or FFGA).

During PE, the GEC developed preliminary construction cost estimates and assisted in the scope for the subsequent Final Design. The grantee, supported by the GEC, prepares control estimates for the Final Design phase. The budget for design work is updated as the design services contracts are negotiated and awarded.

The initial budget for the Final Design effort has been established as an integral part of the project estimate. The Final Design budget may be refined by negotiations with the Engineering Design Consultants (EDC) that will eventually be developing the DBB contract packages. The EDCs are responsible for providing construction cost estimates and improving the quality of the construction cost estimates as the design is advanced. Utilizing the information provided by the EDCs, the GEC maintains a total project cost estimate. When this estimate deviates from the project budget, the GEC reports the details to the grantee and discuss options for resolution. Such options may include redesign, reductions in scope, utilization of budget contingency consistent with the Risk and Contingency Management Plan, reallocation among budget line items, or adjustments to the project budget. Any changes in scope must be presented to the FTA to ensure that they do not violate the conditions of the ROD. For each construction contract, the final estimate is the Engineer's Estimate used to evaluate the Contractor's bids.

Project risks are assessed beginning during the design phase and continuing through placement of the finished Project into service. During design, risk management activities include the identification of major risks during construction and startup, estimation of required contingency reserves, planning of procurement strategies in order to reduce, share or transfer potential risks, and implementation of insurance strategies to protect the grantee from potential damages or losses during construction and startup. Comprehensive planning, including the development of this Project Management Plan, is fundamental to the grantee's approach to risk management. Major aspects of grantee's approach to risk management include systematic risk planning and analysis, application of lessons learned, multi-organizational coordination, risk reduction during design, risk transfer and risk sharing during construction, development of insurance strategies, and contingency planning, as described in the PMP.

Lessons learned from within the transit industry are obtained by both the grantee and its consultants from other transit agencies around the USA, from FTA and from transit industry publications and organizations. Other industry-related lessons to be considered include incorporation of economic factors into project cost and financing models, new insurance and contracting approaches, project teaming, and risk sharing methods being used elsewhere. This process is intended to reduce risks and costs on the Project.

The grantee has established general guidelines for contingency reserves for use in project budget estimates during Final Design. Project procedure 4.PC-09, Contingency Management, which is referenced in the PMP, describes the development and management of these contingencies. Values higher or lower than the guidelines can be used if specific conditions warrant, subject to approval by the grantee's Executive Director.

PMOC Assessment

The PMOC has determined that grantee has satisfactorily addressed this PMP requirement to a level detailed enough to support its request to enter the Final Design phase. However, the PMOC has determined that a budget (cost estimate) revision will be needed as the project detail and scope is refined prior to the FFGA.

3.4.3 Design Management Process

FTA Guidance

The grantee's design management should explain the policies and procedures related to who will perform the engineering, in house or by consultants, all procurement considerations, design criteria and standards, facility requirements, environmental compliance, design configuration, value engineering, peer reviews, and the incorporation of safety, security, quality, and real estate acquisition activities related to the contract documents.

PMP

The PMP addresses design management in Chapter 6 "*Design Management.*" The PMP mentions several design management methods related to Design Build (DB), Design Bid Build (DBB), and Design Build Operate Maintain (DBOM).

The GEC for PE/EIS is organized by discipline with a hierarchy of key personnel responsible for each discipline. The GEC is assisted by subconsultant firms with specialties in a full range of disciplines. The GEC produced design documents for Preliminary Engineering. The GEC II will perform a similar role during Final Design. The GEC's Project Manager and Division Managers, listed in Figure 6 – Final Design Organization Chart of the PMP, work together to coordinate team efforts, to provide direction for various tasks, and to oversee and review work activities and products for compliance with the Project's requirements. Work is being conducted with regular and frequent communication and interaction among the various subconsultant firms, their employees, the grantee, and City departments. Subconsultants are responsible for conducting their designated work and producing their required work products.

The grantee is also procuring services of several EDCs for the Final Design phase. The work of these EDC's will be overseen by the GEC and the appropriate managers within the grantee Engineering and Construction organization. Oversight of design quality, safety, and security requirements by grantee is essential to the proper execution of the work.

The Compendium of Design Criteria (CDC) for the Project ensures that the Project's design activities proceed in accordance with both local and accepted industry standards. The CDC comprises 26 chapters and is utilized as a key element of the Project's Basis for Design. Representative chapters include Operations, Civil, Utilities, Structural, Architecture and

Landscape Architecture, Passenger Vehicles, Maintenance and Storage Facilities, Safety and Security, and Sustainability. The CDC is to be maintained and updated throughout Preliminary Engineering and Final Design to reflect approved changes and modifications to the Project's Basis for Design.

The design oversight provided by the grantee will be a continuous process throughout the Final Design phase of the various contracts. The grantee will implement frequent design reviews, constructability reviews, peer reviews, and value engineering.

The Design Management and Coordination effort is carried out by the grantee, which is involved in coordinating the objectives of the Project as defined in the Planning Phase. The grantee effort involves coordinating with all the project stakeholders, external agencies, Department of Transportation Services (DTS) staff, and the public at large, and supervising and coordinating day-to-day design activities. The Division work force organization is described in Chapter 2.0 of the PMP. The grantee Executive Director is responsible for all work conducted by the grantee team.

The grantee manages the above activities by means of weekly meetings with the GEC, supplemented by meetings with individuals on specific issues and by design reviews at various control points. Coordination of the design is achieved by joint technical meetings, which are intended to resolve conflicts and result in a unified approach to problem resolution. Design reviews are explicitly included in the design schedule and are programmed as described in Chapter 6, "*Design Management*".

PMOC Assessment

The PMOC has determined that grantee has satisfactorily addressed this PMP requirement to a level detailed enough to support its request to enter the Final Design phase.

3.4.4 Construction Schedule

FTA Guidance

An implementation schedule for the entire project is required and should include the following activities: procurement functions, design activities, real estate acquisition, site preparation and utility relocation, construction/installation, testing and start-up. Responsibility should be assigned for developing baseline schedules for the managers of work packages and for maintaining those baselines consistent with the technical, cost, and overall schedule baselines. Authority to revise the baselines should be identified.

A system should be provided for comparing actual work performed with the scheduled work to be performed and for analyzing any variances that may occur. A method for measuring both schedule variance and cost variance should be incorporated.

PMP

The PMP addresses the fundamental policy and procedure required to develop and maintain a project schedule in Chapter 3 “*Management Control*.” It also adequately distinguishes the many sub-schedules that comprise an overall Integrated MPS.

PMOC Assessment

The PMOC has determined that grantee has satisfactorily addressed this PMP requirement to a level detailed enough to support its request to enter the Final Design phase. However, while the PMP satisfies the FTA requirement, the grantee must revise their MPS pursuant to the recommendations included with the OP34 – Project Schedule Review, which was transmitted separately.

3.4.5 Document Control Procedures and Record-Keeping Procedure

FTA Guidance

This element should describe the establishment and maintenance procedures for control of project documents and how relevant documents are current and available.

PMP

The PMP addresses Document Control in Chapter 3 “*Management Control*.” The grantee has established a database with “City DART,” the grantee’s electronic document control system. The grantee is using that software along with Xerox DocuShare and Primavera Contract Manager, which together form the basis for the Project’s overall document control system.

During the remainder of Preliminary Engineering and into Final Design and Construction, grantee’s Oracle Primavera Contract Manager software, also known as “CMS,” will be used to file, store, maintain, and backup multimedia project files as provided by grantee, PMC, GEC, and third parties, within a limited access environment.

The document control system is accessible through a local area network and the internet. The system is managed by the grantee Document Control Group. The document control system allows team members and outside reviewers, whether in the Project office or at a remote location, to share Project information, including drawings and other documentation submitted by the contractor to the grantee for review.

PMOC Assessment

The PMOC has determined that grantee has satisfactorily addressed this PMP requirement to a level detailed enough to support its request to enter the Final Design phase.

While the PMOC has determined this PMP satisfies the FTA requirements, it will continue to closely monitor the document management system and document control processes as the project enters the Final Design phase, as the PMOC has noted procedural deficiencies in the past. The grantee has recently developed numerous project procedures that have assisted with correcting the past procedural deficiencies.

3.4.6 Change Order Procedure

FTA Guidance

Procedures should be developed and responsibility assigned for identifying, evaluating, and accommodating changes that may occur during project design and construction. Procedures should be clear, should permit results to be achieved rapidly, and should provide for full evaluation of the impact of the changes. The avoidance of changes and the prompt settlement of change orders and potential or actual claims must be emphasized. Judicious delegation of monetary authority to approve change orders at the field level can expedite this process. A mechanism should be provided for timely resolution of claims.

PMP

The PMP addresses Change Orders in Chapter 4 “*Procurement and Contracts*” and Chapter 10 “*Construction Management*.” The Configuration Management Plan and Change Control Procedures (5.CA-02, 5.CA-05, 6.CM-03 and 6.CM-06), which are referenced in the PMP, cover the roles of grantee, the GEC and the contractors at various stages of the Project.

Furthermore, PMP Chapter 11 “*Claims Management*” further explains the process, impacts, and consequences stemming from “changes, disputes and claims,” most specifically those that occur during the construction phase. The grantee also developed a Claims Avoidance Plan, which is referenced in the PMP.

PMOC Assessment

The PMOC has determined that grantee has satisfactorily addressed this PMP requirement to a level detailed enough to support its request to enter the Final Design phase.

3.4.7 Organizational Structure

FTA Guidance

A description of organizational structures, management skills, and staffing levels required throughout the construction phase.

PMP

The PMP addresses the grantee Organizational structure in Chapter 2 “*Project Organization and Staffing*.”

In February 2011, the PMOC performed Technical Capacity and Capability (TCC) interviews and assessments of additional project staff hired since the PE Entry Readiness Report, in order to better assess the grantee’s entry into Final Design. The PMOC also reviewed resumes of additional personnel from the grantee, PMC and the GEC identified in PMP Revision 4 Organization Chart and found the Project Team to be well qualified.

PMOC Assessment

The PMOC has determined that grantee has satisfactorily addressed this PMP requirement to a level detailed enough to support its request to enter the Final Design phase.

The OP 21 – Technical Capacity and Capability Review Report contains the PMOC’s recommendations with regard to critical staffing for the project. However, the grantee’s primary challenges with filling key management positions are related to long-term retention, limited salary structure, isolated geography, and, in general, a shallow qualified resource base. The grantee developed a staffing plan dated March 11, 2011 and has begun to advertise grantee positions temporarily filled by the PMC. Inherently, the need for PMC staff will diminish as the grantee fills key management positions. Until such time, it will be necessary for the grantee to continue supplementing its staff with PMC staff. It is the PMOC’s professional opinion that two years from the approval to enter Final Design will provide sufficient lead-time to perform the recruitment, selection and training for replacing a portion of the PMC with grantee staff. The PMOC strongly recommends that the resource demands associated with the Final Design phase of a \$5 billion project require full time and concentrated attention and continuity within the grantee’s organization for smooth transition into future phases.

It is the PMOC’s professional opinion that the Project organization, staffing, and management approach provides the technical capability to support the grantee’s initial implementation of the project during Final Design. However, the PMOC recommends that the grantee develop a succession plan for key management positions that may be considered short term (three years or less) as the project is refined and continues in order to execute a “knowledge transfer” from project consultants’ expertise to the grantee.

3.4.8 Quality Assurance Program

FTA Guidance

A Quality Assurance/Quality Control (QA/QC) program is required for all FTA funded major capital projects. QA/QC functions, procedures, and responsibilities for construction, system installation and integration of system components should be included.

PMP

The PMP addresses Quality Assurance in Chapter 3 “*Management Control.*” The grantee has developed a Quality Management Plan (QMP) for the Project and noted the utilization of a Quality Assurance Manager (QAM), who reports directly to the grantee or Executive Director.

PMOC Assessment

The PMOC has determined that grantee has satisfactorily addressed this PMP requirement to a level detailed enough to support its request to enter the Final Design phase.

3.4.9 Material Testing Policies and Procedures

FTA Guidance

The PMP must contain materials testing policies and procedures as required by 49 CFR 633.

PMP

The PMP marginally addresses the material testing procedures in Chapter 3 “*Management Control;*” however, materials testing policy and procedures are included in the grantee’s Quality Management Plan and Construction Management Plan. The grantee is in the process of

developing a Resident Engineer and Inspection Manual for DB and DBB that will include material testing.

PMOC Assessment

The PMOC has determined that grantee has satisfactorily addressed this PMP requirement to a level detailed enough to support its request to enter the Final Design phase.

For now, the QMP and Draft Construction Management Plan (CMP) address this subject, but more-definitive procedures will be addressed during the Final Design phase with the development of the Resident Engineer and Inspection Manual for DB and DBB.

3.4.10 Internal Reporting Requirements

FTA Guidance

The grantees shall develop a plan for internal reporting requirements including cost and schedule control procedures.

PMP

The PMP primarily addresses internal reporting in Chapter 2 “*Project Organization and Staffing*,” Chapter 3 “*Management Control*,” and Chapter 6 “*Design Management*.” Upward and downward reporting will be coordinated within the program blended organization structure. The program organization chart, project procedures, and sub plans that have been developed by the grantee and referenced in the PMP have greatly improved the requirements for internal reporting between the grantee, PMC, and GEC.

PMOC Assessment

The PMOC has determined that grantee has satisfactorily addressed this PMP requirement to a level detailed enough to support its request to enter the Final Design phase.

The PMOC has emphasized the importance of maintaining “program oversight” of the individual contracts among the various contractors and consultants. Upwards reporting is crucial as the numerous environmental mitigations, design coordination, and construction progress reports are compiled and distributed to the grantee’s key management staff. The current internal reporting procedures referenced in the PMP have greatly improved the internal reporting requirements. However, implementation of those procedures is important for the blended organization to function together.

3.4.11 Testing the Operational Systems

FTA Guidance

The grantee shall develop criteria and procedures to be used for testing of operational systems or its major components. A testing program plan should establish the process for conducting, monitoring, and coordinating the test program; delineate the test organization and specify its authority and responsibilities; and describe the administrative requirements of the test program.

PMP

The PMP addresses testing the operational system in Chapter 16 “*Testing and Start-Up.*” The PMP indicates that more detailed testing and operational system procedures will be developed during Final Design and construction phases.

The grantee, with assistance from the GEC and contractors, will develop the System Integration Test Plan (SITP) based on grantee’s requirements. The CSC will develop a Rail Activation Plan (RAP) sufficiently in advance of the revenue operations date and will commence preparations for commissioning the new rail service and planning all start-up events at that time. The RAP, combined with the SITP and Pre-Revenue Operations Plan, will describe all activities beyond the tasks of construction and installation completion, contract acceptance testing and integration testing. As part of the planning effort, the CSC will prepare and submit the Systems Integration Test Plan and the RAP to the grantee for approval.

PMOC Assessment

The PMOC has determined that grantee has satisfactorily addressed this PMP requirement to a level detailed enough to support its request to enter the Final Design phase.

The PMOC agrees that operational system testing procedures can be addressed during the Final Design phase and early construction phases.

3.4.12 Periodic Updates of the Plan

FTA Guidance

This element should discuss the grantee’s commitment to make periodic updates of the plan, especially related to project budget and project schedule, financing, ridership estimates, and where applicable, the status of local efforts to enhance ridership in cases where ridership estimates are contingent, in part, upon the success of such efforts.

PMP

The grantee initially prepared the PMP near the conclusion of the Alternatives Analysis process and focused it on the PE/EIS phase of the Project. PMP Revision 1, dated November 3, 2008, described the process for the progression of the Project into PE and subsequently through the Final Design, procurement, construction, and system start-up phases. PMP Revision 2 was issued on March 1, 2009 to provide an update of the project description for the selected Airport route, master schedule, project cost, and testing. Revision 3 of the PMP provided an update as of the start of PE in November 2009. Revision 4 of the PMP dated April 2011 has been prepared during the latter part of PE and for entry into Final Design.

The PMP will require another revision as the project scope, delivery method, and organization is refined and expanded during Final Design and prior to FFGA.

PMOC Comments

The PMOC has determined that grantee has satisfactorily addressed this PMP requirement to a level detailed enough to support its request to enter the Final Design phase.

3.4.13 Monthly Submission of Project Budget and Project Schedule

FTA Guidance

The PMP should state the grantee's commitment to submit a project budget and project schedule to the FTA each month.

PMP

The PMP addresses monthly cost and schedule reporting in Chapter 3 "*Management Control*." The grantee developed and distributed the first grantee Project Status Report in April 2010. The first monthly report was brief and contained only basic project data. At the time, the PMOC provided review comments regarding the report format, detail, and organization, and stressed the importance of maintaining progress status information in the report, especially for critical issues, procurements, and public involvement.

The grantee is now issuing monthly progress reporting.

PMOC Assessment

The PMOC has determined that grantee has satisfactorily addressed this PMP requirement to a level detailed enough to support its request to enter the Final Design phase.

3.5 Sub-Plan Document Review

Sub plan documents are referenced in the PMP but require additional detail and information, which can more easily be recorded and referenced in a stand-alone document. Table 6 below provides a listing and status of each of the subcategories of the PMP in accordance with 49 CFR 633 and FTA's *Project & Construction Management Guidelines*, May 2003 Update. The table includes the document revision and status pursuant to PMOC review and comment. Note that the table does not include the numerous Procedures that are also developed and implemented by the grantee to further support the function, integration, and execution of the various plans. These are addressed in Section 4.4.2 of this report.

Table 6. PMP Sub-Plans

Sub-Plan	Rev. No.	Date	Notes	Requirement Period
Quality Management Plan (QMP)	0	01-Jan-11	Acceptable for FD	▲
Real Estate Acquisition and Management Plan (RAMP)	4	21-Dec-10	Accepted by FTA on 08-Feb-11	▲
Bus Fleet Management Plan (BFMP)	2	Jun-10	Acceptable for FD	▲
Rail Fleet Management Plan (RFMP)	0	06-Apr-11	Acceptable for FD	▲
Safety and Security Management Plan (SSMP)	2	01-Jun-11	Acceptable for FD	▲
Safety and Security Certification Plan (SSCP)	1	01-Jun-11	Acceptable for FD	▲
Configuration Management Plan	0	23-Dec-10	Acceptable for FD	▲
Staffing Plan	3	11-Mar-11	Acceptable for FD	▲
Risk and Contingency Management Plan		27-Sep-11	Acceptable for FD	▲
Operating Plan		06-Apr-11	Acceptable for FD	▲
Force Account Plan	0	21-Jan-11	Acceptable for FD	▲
Mitigation Monitoring Program	0	18-Feb-11	Acceptable for FD	▲
Interface Management Plan	0	29-Mar-11	Acceptable for FD	○
Contract Packaging Plan	2	09-Mar-11	Acceptable for FD	▲
Claims Avoidance Plan	0	06-Apr-11	Acceptable for FD	▲
Construction Management Plan (CMP)	0	12-Apr-11	Acceptable for FD	▲
Contract Resident Engineer Manuals (DB & DBOM)		28-Sep-11	Acceptable for FD	○
Contract Resident Engineer Manuals (DBB)		Pending	Grantee submittal pending	○
Project Procedures			Refer to separate procedure matrix included in OP 21 section for status of individual procedure acceptance	

NOTE: ▲ – Required Prior to Final Design ○ – Required during FD but prior to FFGA

The PMOC provided review comments and recommendations for each of these PMP sub plans and numerous procedures. The PMOC discusses its review comments and recommendations with grantee staff during its monthly on-site meetings. The PMOC is confident that the PMP sub-plans that are under review by the PMOC or in the process of being re-submitted by the grantee will meet the Final Design requirements.

The PMOC used the FTA document *New Starts Project Planning and Development Checklist of Project Sponsor Submittals to FTA to Enter Final Design* dated August 10, 2007 as a guide to support the sub plan document review process. The following items are brief analyses of the sub-plan document reviews that the PMOC performed:

- (1) The PMOC noted several inconsistencies with the format, quality, and detail contained within the PMP Project Control chapter and project control sub plans and procedures as they lacked traceable and consistent functionality and content. The PMOC request to address this concern was included as a recommendation in

the OP 21 – Technical Capacity and Capability Report, which has been submitted separately.

- (2) The PMOC recommends that the grantee develop a Responsibility Assignment Matrix (RAM) and include it in the PMP, PMP companion documents, and procedures, as necessary to improve communication position descriptions, roles and responsibilities, functionality, and interface among other members in the Project organizational breakdown structure.
- (3) The RAMP has been developed to outline the policies and procedures that the grantee follows to comply with Federal and State requirements relating to Right of Way identification, appraisal, land acquisition, relocation, and property management activities. Any agency utilizing Federal funds to finance a public project that requires the acquisition of private property or causes displacement must comply with policies and procedures that conform to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, (Uniform Act), and the applicable implementing guidelines. The policies and procedures also incorporate compliance requirements of State Statutes and guidelines.
- (4) The PMOC has some concern with the Interface Management between the grantee, GEC, CSC, DB Guideway Contractors, and DBB EDC Designers/Contractors. Although the grantee has developed an Interface Management Procedure and Interface Management Plan to address the interface and coordination between the CSC with the DB Guideway Contractors and DBB EDC Designers/Contractors, its application to contracts that have not been issued is yet unproven. Once all the contractors are on board, the Interface Management Procedures and Interface Management Plans will need to be refined to incorporate lessons learned.
- (5) The PMP's *Section 10.0 Construction Management* states that the CMP is the primary controlling document for the construction process. Together with the Resident Engineer and Inspection Manual, the QMP, and the SSMP, it describes the responsibilities, processes, and procedures for controlling construction. The PMOC recommends that the DBB Resident Engineer and Inspection Manual be developed prior to the start of DBB construction. The grantee will be requesting Letters of No Prejudice (LONP) early in Final Design to begin construction activities associated with the DB contracts, and these plans will be critical to adequately managing the construction activities.

3.6 Summary of PMOC's Findings, Observations and Comments

Per OP 20, the PMOC reviewed the grantee's current PMP, Revision 4, dated April 2011, and assessed, evaluated and characterized the PMP and considered the extent, nature, level of detail, and quality of the grantee's approach. The intent of this PMOC review report is to provide the FTA with findings, analyses, professional opinions, and recommendations in a clear and understandable format. The PMOC reviewed each element of the PMP and made determinations

of acceptance, revision, or rejection, included with recommendations as noted in the various sections of this report. A summary of the PMOC's findings, observations, and comments are included below:

- (1) The grantee will continue encountering difficulty with candidate recruitment and employee retention necessary to meet the Project staffing plan. The PMOC also believes that the grantee will face challenges transitioning key PMC management positions to permanent grantee positions.
- (2) The grantee will face challenges transitioning key PMC management positions to permanent grantee positions. The PMOC will continue monitoring the grantee's project management process to ensure that the grantee is effectively managing the Project and continues to be responsible for all decisions affecting project design, cost, and schedule until all key management positions identified are transitioned to full-time grantee staff.
- (3) The grantee must update the PMP to reflect changes associated with HART.
- (4) During the OP 34 – Project Schedule Review process, the PMOC noted several inconsistencies with the format, quality, and detail contained within the PMP Project control chapter and project control sub plans and procedures, as they lacked traceable and consistent functionality and content.
- (5) The PMP marginally addresses the material testing procedures in Chapter 3 “*Management Control*,” however, materials testing policy and procedures are included in the grantee's Quality Management Plan and Construction Management Plan. The grantee's Resident Engineer and Inspection Manual for DB and DBB address material testing.
- (6) The PMOC has emphasized the importance of maintaining “program oversight” of the individual contracts among the various contractors and consultants. Upwards reporting is crucial as the numerous environmental mitigations, design coordination, and construction progress reports are compiled and distributed to the grantee's key management staff. The current internal reporting procedures referenced in the PMP have greatly improved the internal reporting requirements. However, implementation of those procedures is important for the blended organization to function together.

3.7 Conclusion

Through review of the grantee's PMP, the PMOC was able to assess the ability of the grantee and its project management approach to take the project successfully from entry to Final Design through award of the Full Funding Grant Agreement (FFGA). In addition, the PMOC finds that the PMP at this phase demonstrates a well conceived plan for project bidding and construction.

The PMOC has summarized its findings and opinions and present recommendations with respect to the adequacy and soundness of the grantee's plans and procedures for:

- NEPA coordination. The PMOC reviewed the grantee's Mitigation Monitoring Program that has been developed for managing and implementing mitigation actions into the design documents, cost estimates and schedules and has no further comments.
- Design control. The grantee has established and is implementing the plans and procedures for design control including reviews for design, value engineering, life-cycle cost considerations, constructability, and safety.
- Project controls. The PMOC reviewed the grantee's baselines for capital cost estimate and schedule. The grantee has accepted the PMOC recommendation of combining all various schedules into one all encompassing schedule file, thus creating a true MPS. The Scheduling Procedures and PMP require revision to address any Schedule Breakdown Structure changes. The grantee's approach and plans for risk identification, assessment, and mitigation, and the development of adequate contingencies are acceptable.
- Project Delivery and Procurement. The PMOC reviewed the grantee's contracting plan for project delivery and procurement and evaluated the soundness and adequacy of the its approach to bidding and awarding of contracts, procurement of materials, equipment and vehicles, and the construction administration and construction management of the Project, and the PMOC has no further comments. The selected project delivery methods and contract packaging strategies are reflected in project schedules and cost estimates.
- PMP Sub plans. The PMOC reviewed the adequacy and soundness of the grantee's PMP sub plans, including the grantee's Technical Capacity and Capability, Quality Assurance/Quality Control, Safety and Security Management Plan, Real Estate Acquisition Management Plan, and Bus and Rail Fleet Management Plans. The PMOC analyzed these sub plans and has made several suggestions for their improvement to the grantee, along with recommendations for resolving issues surrounding the development and implementation of these plans.

While PMP revisions will be necessary prior to the FFGA, the PMP is generally a well written and thorough document that satisfies the FTA requirements for a project entering the Final Design phase. The PMOC recommends that PMP Revision 4, dated April 2011 be approved as a deliverable for entering Final Design.

3.8 Recommendations

There are no recommendation conditions that should be addressed by the grantee prior to entry into Final Design phase.

The grantee continues to advance several areas of the project as it prepares to move into Final Design and construction. Because of the most recent updates to the project delivery method, revisions to the organizational chart due to staff changes, and concerns with grantee staff transition, further development of the PMP in the following areas will be required during the Final Design phase of the project:

- (1) Update the Staffing Plan and revisions to the organization chart due to the creation of HART, changes in PMC positions and grantee staff, and to adherence to the expectation of transitioning of PMC staff to grantee staff during the Final Design and construction phase of the Project.
- (2) Update Figure 6 – Final Design Organization Chart of the PMP to include the

Project Labor Agreement (PLA) Officer, Legal Counsel, and General Engineering Consultant (GEC) Safety and Security personnel positions that are currently unfilled.

- (3) Update Figure 6 – Final Design Organization Chart of the PMP to add positions to the organization chart recommended by the PMOC in OP 21 section of this report.
- (4) Update the PMP to address the new transit authority in detail since it commenced operations on July 1, 2011.
- (5) Expand the Construction Management and Testing and Start-Up sections during Final Design, as the requirements and the processes are further defined.
- (6) Develop the DBB Resident Engineer and Inspection Manual prior to the start of the DBB construction contracts.

4.0 OP 21: TECHNICAL CAPACITY AND CAPABILITY REVIEW

4.1 Purpose

Per FTA Oversight Procedure 21, Grantee Technical Capacity and Capability Review, the PMOC will perform evaluations and render professional opinions regarding both the grantee's Technical Capacity and Capability (TCC) to successfully implement, manage, and complete a major Federal-assisted capital project as well as its ability to recognize and manage project risk factors and implement mitigation measures. The evaluations are to cover the following:

- Organization, Personnel Qualifications and Experience
- Grantee's approach to the work, ability to perform the work including its methods, policies, and procedures for developing and updating reasonable and realistic project cost estimates and schedules and the grantee's abilities to identify, analyze, manage and mitigate project risks.

4.2 Methodology

The PMOC established a methodology to comprehensively review, evaluate, and formulate recommendations and opinions based on detailed review of the grantee's organization, personnel qualifications and experience, and pertinent requirements and documents per OP 21. The PMOC conducted the TCC review concurrently with the PMP and sub plan (companion) document reviews. The PMOC first reviewed the PMP and latest organization charts. Then the PMOC requested resumes and interview dates for each of the Project's key management staff in preparation of PMOC TCC interviews. The PMOC also asked for anticipated hire dates for the vacant key management positions.

The requirements and document delivery dates were recorded in a Final Design "Roadmap" document. The Roadmap document is updated monthly and discussed at monthly progress and FTA quarterly review meetings with the FTA, PMOC, and the grantee. Some of the significant Final Design Roadmap topics and actions include:

- Project Management Plan (PMP)
- Project Cost Estimate
- Master Project Schedule (MPS)
- Staffing Plan
- Real Estate and Acquisition Management Plan (RAMP)
- Quality Management Plan (QMP)
- Bus Fleet Management Plan (BFMP)
- Safety and Security Management Plan (SSMP)
- Third-Party Agreements
- Rail Fleet Management Plan (RFMP)
- Contracting Plan for Final Design Phase
- Risk and Contingency Management Plan (RCMP)

The PMOC provided review comments as the grantee developed and submitted the various Roadmap deliverables. The documents and procedures thus evolve through several revisions during the process. The grantee and the PMOC meet on a monthly basis to discuss the

deliverables and the PMOC comments and recommendations. The Roadmap deliverable review also supports the PMOC's TCC review regarding the grantee's management policies and procedures and effectiveness in delivering a high quality Project on time and under budget.

4.3 FTA References

The following are the primary references to Federal legislation, regulation, and guidance that PMOC used to conduct the TCC review:

- Regulations
 - 49 CFR Part 633, Project Management Oversight
- FTA Circulars
 - C5010.1D, Grants Management Guidelines
 - C5200.1A, Full-Funding Grant Agreements Guidance
 - C4220.1F, Third-Party Contracting Requirements
 - C5800.1, Safety and Security Management Guidance for Major Capital Projects
- Guidance
 - Terms of the FFGA and referenced documents
 - FTA's *Project and Construction Management Guidelines*, 2003 update

4.4 General Review of Technical Capacity and Capability

The following sections contain the PMOC's general review of the grantee's technical capacity and capability (TCC). The general review chapter contains two sections as contained in the FTA OP 21 Section 6.1: organization and staffing; and PMP and sub-plan review. The PMOC findings, opinions, and recommendations follow each sub-section topic and are summarized in the report conclusion.

4.4.1 Organization, Personnel Qualifications and Experience

Organization

The PMOC reviewed the complete organization of the grantee to determine the likelihood of the project management team successfully implementing the project. The PMOC also determined whether the grantee has an organizational structure conducive to effective and efficient implementation of the project. The following subsections provide a summary of the PMOC observations from this review.

In April 2007, the Department of Transportation Services (DTS) presented a plan for 26 staff positions for the Project, 21 of which were filled by the grantee's Project Management Consultant (PMC), InfraConsult LLC. Since then, the grantee has made significant progress identifying and filling additional key management positions, which better supports and demonstrates its TCC necessary to design, construct, and operate the Project. While several key management, technical lead, and mid-level staff members are on board, several positions remain unfilled as the Project continues into the Final Design and construction phase.

The grantee awarded a contract to InfraConsult LLC in November 2009 to provide Project Management Support Services (PMC). The consultant will serve as a program manager in providing oversight of the PE, Final Design, and construction activities for all contracts. The

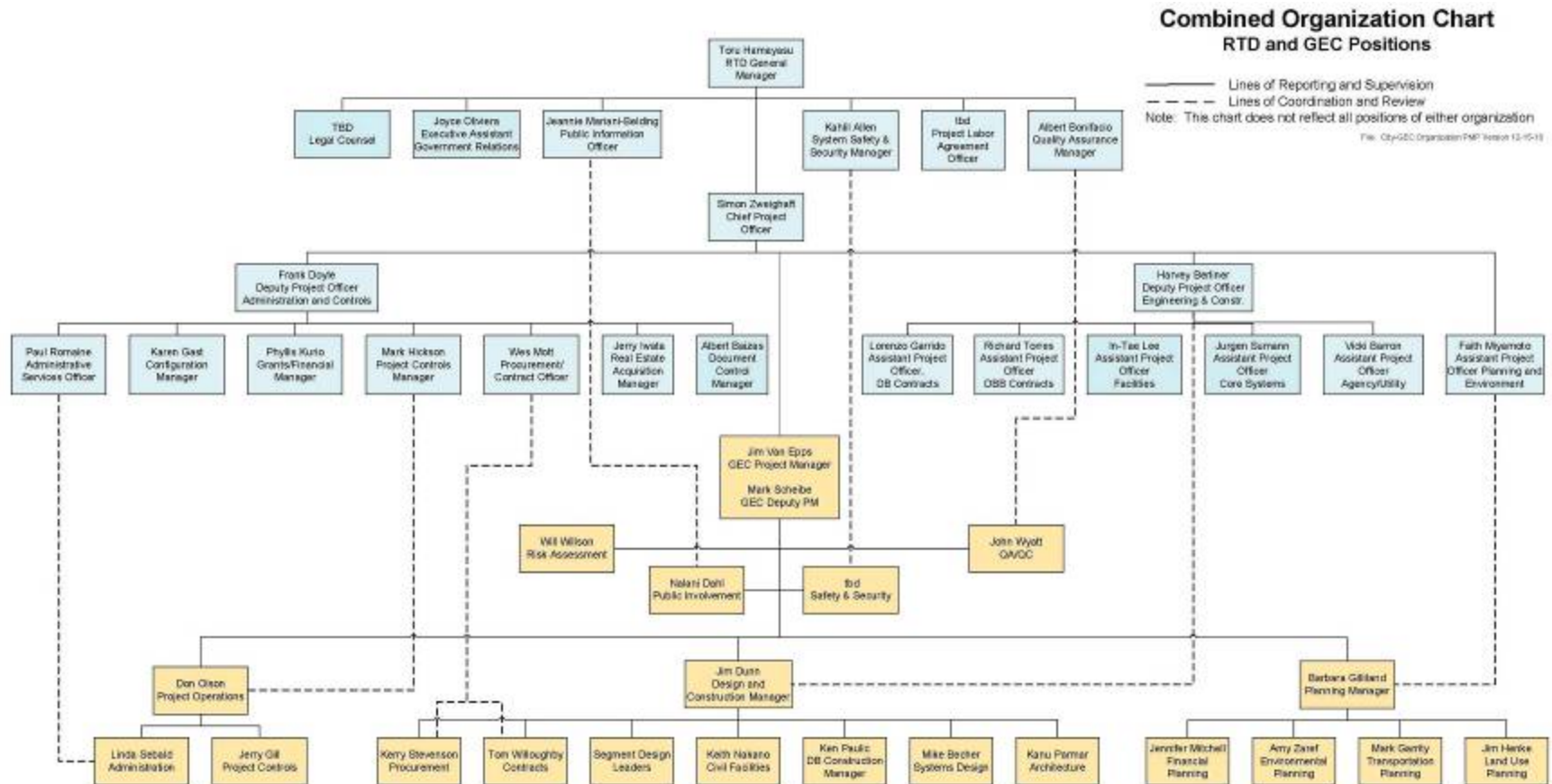
scope of the PMC contract includes the following: assisting the grantee with specialized support during design and construction; assisting the grantee with oversight of design, construction, manufacturing, precast concrete operations, installation, testing, and commissioning; and assisting the grantee with high-level management support for financial and political issues. In general, the PMC contract serves as a staff augmentation contract for the grantee. It must be noted that the PMC contract was not solicited with the required Federal clauses based on the Fiscal Year 2010 Procurement System Review Final Report prepared for the FTA. The FTA has notified the grantee that it must proceed with timely re-procurement of the PMC contract, which includes Federal clauses. The grantee issued an RFP on August 2, 2011 and anticipates issuing NTP to the selected PMC by December 2011. The terms of the NTP will be determined during negotiations with the selected firm.

Parsons Brinkerhoff (PB) was under contract as the General Engineering Consultant (GEC). The GEC contract scope includes assisting with the preparation of NEPA documents and conceptual engineering, and Preliminary Engineering. The GEC contract began August 2007. Eight contract amendments have been issued extending the period of performance through July 2011 and authorizing total budget of approximately \$168 million. The pre-PE costs for the GEC I contract per the City's Contract Packaging Plan (CPP) is approximately \$88 million.

The grantee executed the GEC II contract with Parsons Brinkerhoff on June 30, 2011. The contract amount is \$300 million (\$150 million base amount plus \$150 million allowance amount). It is anticipated that the \$150 million allowance for additional work will be used after the initial three-year term of the contract. However, it is possible with a contract amendment to expend a portion of the allowance amount any time during the term of the contract. Notice to Proceed (NTP) #1 was issued on August 2, 2011. It should be noted that the cost for the first year of the contract is still being negotiated. The results of these negotiations should not increase the value of the \$300 million total contract amount. HART anticipates issuing a contract amendment to the GEC II contract for the first year of the contract in October 2011. The GEC II contract should transition smoothly as most of the key management personnel are already on board through the GEC contract.

Figure 2 presents the Organizational Chart for the Project team. This chart represents the top-level organization. The PMP contains several lower level organizational charts as well.

Figure 2. Organizational Chart



Personnel, Qualifications and Experience

The PMOC reviewed the grantee assigned and supporting staff qualifications and conducted interviews of key management staff in order to gain insight of their experience and background and relevant project experience, understand their conception of the roles and responsibilities, and obtain their input as to the critical path and issues related to their department and the Project as a whole.

The PMOC performed TCC interviews and assessments of additional project staff hired since the PE Entry Readiness Report in order to better assess the grantee's readiness to enter Final Design. The PMOC interviewed the following personnel:

- Deputy Project Officer Controls & Administration – Frank Doyle (grantee)
- Assistant Project Officer Design-Build Contracts – Lorenzo Garrido (PMC)
- Assistant Project Officer Facilities – In-Tae Lee (grantee)
- System Safety and Security Manager – Kahlil Allen (PMC)
- Quality Assurance Manager – Alberto Bonifacio (PMC)
- Public Information Officer – Jeannie Mariani-Belding (PMC)
- Assistant Project Officer Design-Bid-Build Contracts – Richard Torres (grantee)
- Assistant Project Officer Utility, Agency & Utility Coordination – Vicki Barron-Sumann (PMC)
- Risk Manager – Mark Hickson (PMC)

The PMOC also reviewed resumes of approximately twenty additional personnel from the grantee, PMC, and the GEC identified in PMP Revision 4 Organization Chart and found the project team to be well qualified.

The PMOC used Appendix C of OP 21 – Sample Questionnaire to assess the TCC for key individuals from the grantee and PMC. The purpose of the questionnaire is to gain insight into the interviewees' background and experience, to evaluate their understanding of their project roles and responsibilities, and to obtain their input and opinion on what they believe are the most important project critical issues and challenges.

The PMOC also used OP 21 Appendix D – “*Summary of Staff Qualifications Experience*”, which documents the information gathered by the PMOC during the interview process. These reviews are used to determine whether the grantee has the appropriately qualified staff and/or third-party consultants to perform the activities identified below.

(1) Design and manage the construction of the project

The current grantee staff has demonstrated the capability of managing the work currently performed by the PMC and the GEC. As work progresses into Final Design, the grantee will need to add staff as necessary to hold direct accountability and control of Project scope, schedule, and budget. Development of the project design will include quality review and audit of the GEC and other engineering design consultants assigned to the project, the monitoring of safety and security design requirements and implementation, and continued oversight of the real estate acquisition process.

Currently, the project's organizational structure includes grantee staff along with PMC and GEC staff, as shown in Figure 2. The current organizational structure provides the experience and expertise to manage the project at this phase of the work and the assigned grantee staff is sufficiently qualified to manage and monitor all current project activities including the third-party consultants/contractors to be procured during Final Design Phase

The PMOC spent additional time and attention to the Project Controls Department since it encompasses budget, cost, time, and risk management. Since 2009, the PMOC had expressed concern over the technical capability of the Project Controls Manager (PCM), a position filled by the PMC. This position is responsible for providing oversight on all project control elements as related to scope, schedule, and budget, including cost control, cost estimating, schedule management, document management, quality control interface, and risk assessment analysis. The PMOC's concern stemmed from observing a chronic issuance of fundamentally unsound project schedules and procedures. Further investigation and observance of poor project control deliverables led to the PMOC discovery that the grantee Project Control team was not collaborating effectively with the GEC and other grantee consultants. Since September 2008, the PMOC conducted four project control and schedule management workshops in an effort to support and stimulate the grantee's project control department. The PMOC shared numerous lessons learned, procedures, and report examples. However, many of the PMOC's recommendations were not properly implemented

At the direction of the grantee, the PMC replaced the Project Controls Manager (PCM) in May 2011, in advance of the PMOC's Project Control workshop that was conducted May 10-12, 2011. The PMOC will continue to monitor the deliverables and staff collaboration as the project advances. While the PMOC believes the grantee now the adequate and experienced staff to oversee the Project Controls Manager and staff, the PMOC re-emphasized the importance of closely monitoring the new PCM as the project nears entry into the Final Design phase.

The project staff exhibits a high degree of professional maturity and expertise. Although the organization is quite new and is still evolving, it benefits from the fact that several of the lead managers have worked together on other large, successful projects. The PMOC also observed, through the interview and document review processes, that key management staff is experienced, has established basic defined roles and responsibilities, and can work together as a team. All are essential qualities for a competent and effective project management organization. While certain challenges are inherent with a blended organizational approach, the PMOC has determined that the management team is fundamentally sound and capable.

- (2) *obtain support and incorporate requirements from the multiple jurisdictions through which the project may pass*
- (3) *obtain cooperation and incorporate requirements from third parties including railroads, utility companies, and adjacent parcel owners*

The entire project alignment falls within the jurisdiction of the City and County of Honolulu. The grantee's Project communications and public relations organization accounts for the coordination and working relationship with the various interest groups, communities, cultures and neighborhood groups, business owners' and related stakeholders. Other related coordination efforts include the extensive amount of interagency agreements and partnerships with various federal, state, and local agencies as listed in the "Agreements" section of this report.

- (4) *Deliver the project, given the form of project delivery method(s) it plans to use, e.g. design/bid/build, design/build, Construction Management/General Contractor (CM/GC), etc.*

The grantee's Work Breakdown Structure (WBS) and Organizational Breakdown Structure (OBS) account for the planning and execution of the Project's multiple contract delivery methods: design-build, design-bid-build, and design-build-operate-maintain. The organization includes a GEC to perform NEPA documentation support, conceptual planning, and PE, Final Design, engineering services during construction, and construction management support through the distillation of Contract Resident Engineering teams. The grantee will also be supported by a separate Construction Engineering and Inspection (CE&I) consultant. The grantee project management organization has been strategically aligned to provide oversight of each contract delivery method by assigning an Assistant Project Officer over each group of contracts according to contract delivery method.

The grantee's GEC, Resident Engineering teams and CE&I consultant are aligned according to the contract delivery method and report to the respective Assistant Project Officer. The PMOC interviewed each of the Assistant Project Officer's and determined they possess the experience and qualifications to execute and oversee the multiple contracts and contract types within the overall Project.

- (5) *develop and implement a sound Project Management Plan and its required sub-plans,*

The grantee initially prepared the PMP near the conclusion of the AA process and focused it on the PE/ EIS phase of the Project. PMP Revision 1, issued on November 3, 2008, described the PMP process for the progression of the Project into PE and subsequently through the Final Design, procurement, construction, and system start-up and testing phases. PMP Revision 2 was issued on March 1, 2009 to account for a major corridor re-alignment that deleted the Salt Lake segment and shifted to the Airport Alternative route. Revision 2 also accounted for revisions to the master schedule, project cost, and testing. PMP Revision 3 included changes specific to commencement of PE in November 2009. Revision 4 of the PMP was issued April 2011 and responds to recent PMOC comments. Revision 4 also includes preparations necessary to enter the Final Design and construction phases of the Project.

Section 3.8 of this report identifies the PMOC recommendations associated with the review of the PMP.

The grantee has sufficiently addressed the FTA's required PMP elements contained in 49 CFR 633 necessary to continue the project into the Final Design phase. However, both the PMOC and the grantee recognize that PMP revisions will be necessary since HART was established and whenever changes to project delivery methods, construction, startup, or testing arise. The PMOC recognizes that the grantee can incorporate certain policies and procedures into the PMP during the Final Design phase. The PMOC does not prejudice these secondary requirements and has concentrated on the primary requirements needed for FTA approval to enter Final Design.

The PMOC used the FTA document *New Starts Project Planning and Development Checklist of Project Sponsor Submittals to FTA to Enter Final Design* dated August 10, 2007 as a guide to support the TCC document review process. provides a listing and status of the subcategories of the PMP in accordance with 49 CFR 633 and FTA's *Project & Construction Management Guidelines*, May 2003 Update. Table 6 provides a summary of the status of the grantee sub-plans. The sub-plan status contains a "requirement period" which depicts which documents are required prior to entry into the Final Design phase and which documents can be finalized during the Final Design phase.

Following are PMOC observations on specific sub-plans:

- Real Estate Acquisition and Management Plan (RAMP) – The RAMP was accepted by the FTA on February 8, 2011.
- Interface Management Plan and Interface Management Procedure – The grantee has incorporated the PMOC review comments and has submitted acceptable an Interface Management Plan and Interface Management Procedure.
- Construction Management Plan (CMP) – The grantee has incorporated the PMOC review comments and has submitted an acceptable CMP.
- Quality Management Plan (QMP) – The grantee has incorporated the PMOC review comments and has submitted an acceptable QMP.
- Safety and Security Management Plan (SSMP) – The grantee has incorporated the PMOC review comments and has submitted an acceptable SSMP.
- Risk & Contingency Management Plan (RCMP) – The grantee has incorporated the PMOC review comments and has submitted an acceptable RCMP.

In addition to the sub-plans listed above, the PMOC reviewed the Policies and Procedures developed by the grantee and its consultants as identified in Table 7. Some document development evolved through several revisions during the PMOC review; PMOC noted some documents that require further revision as the project proceeds into construction. The PMOC recommends that the grantee develop a Project Responsibility Assignment

Matrix similar to Figure 7 in the PMP in order to better document and clarify the roles and responsibilities, functions, and interface required among the blended organization of city department, city Project, and consultant staff.

Table 7. Procedure Documents

Procedure	Rev. No.	Date	Status	Requirement Period
1.PP-02 – Procedure Development Process	0	16-Mar-11	Acceptable	▲
1.PP-03 – Standard Terms, definitions, and Acronyms	0	26-May-11	Acceptable	▲
1.PP-04– Baseline Documents Revision and Control	0	14-Jun-11	Acceptable	▲
2.PA-01 – Security Sensitive Information (SSI)	0	26-May-11	Acceptable	▲
2.PA-02 – Procurement Control	0	19-May-11	Acceptable	▲
2.PA-03 – Email Management	0	05-May-11	Acceptable	▲
2.PA- 04- Project Wide Document Control	0	26-May-11	Acceptable	▲
2.PA-05 – Project Library	0	05-May-11	Acceptable	▲
2.PA-06 – Community Relations and Media Contacts	0	16-Mar-11	Acceptable	▲
2.PA-07 – RTD Training Procedure	0	26-May-11	Acceptable	▲
3.PM-01 – Contract Management System	0	16-Mar-11	Acceptable	▲
3.PM-04 – Public Information Communication	0	16-Mar-11	Acceptable	▲
3.PM-05 Meeting/Minutes	0	16-Mar-11	Acceptable	▲
4.PC-02 Project Management Control		30-Jun-11	Acceptable	○
4.PC-03 – Project Progress Reports	0	16-Mar-11	Acceptable	▲
4.PC-04 – Program Scheduling	0	30-Jun-11	Acceptable	▲
4.PC-05 – Project Accounting	0	26-May-11	Acceptable	▲
4.PC-06 – Cost Estimating	0	05-May-11	Acceptable	▲
4.PC-07 – Cost Control	0	05-May-11	Acceptable	▲
4.PC-08 – Risk Management	0	26-May-11	Acceptable	▲
4.PC-09 – Contingency Management	0	16-Mar-11	Acceptable	▲
5.CA-01 – Contract Administration	0	26-May-11	Acceptable	▲
5.CA-02 – Contract Change Management	0	16-Mar-11	Acceptable	▲
5.CA-03 – Contractor Progress Payments	0	16-Mar-11	Acceptable	▲
5.CA-04 – Contractor Progress Reports	0	08-Apr-11	Acceptable	▲
5.CA-05 – Contract Change Orders	0	16-Mar-11	Acceptable	▲
5.CA-06 – Contract Closeout	0	16-Mar-11	Acceptable	▲
5.CA-07 – Claims and Disputes Resolution	0	05-May-11	Acceptable	▲
6.CM-01 – Submittal Procedure	0	05-May-11	Acceptable	▲
6.CM-02 – RFI Procedure	0	18-Apr-11	Acceptable	▲
6.CM-03 – RFC Procedure	0	16-Mar-11	Acceptable	▲
6.CM-05 – Interface Management and Coordination Procedure	0	26-May-11	Acceptable	▲

NOTE: ▲ – Required Prior to Final Design

○ – Required during FD but prior to FFGA

(6) *Secure and administer the required local funding*

The Project is primarily funded through two sources: FTA Section 5309 New Starts Funds and revenues from the dedicated 0.5 percent (General Excise Tax) GET surcharge. Because the Project consists of multiple contract delivery methods including design-build, design-bid-build, and design-build-operate and maintain, the grantee intends to accomplish much of the Project with local funds while retaining eligibility for future FTA participation. The grantee has successfully secured and administered local funding for the Project and continues to advance the Project for the past several years. The grantee anticipates executing an FFGA in 2012.

(7) *Maintain the grantee's existing transit system with the addition of the Project*

The grantee is the City and County of Honolulu. The current transit system is a fixed route bus system and complementary paratransit service. The Public Transit Division (PTD) is responsible for planning and directing the system. The PTD oversees a bus management services contractor responsible for operating the bus and paratransit systems.

In November 2010 voters passed an Amendment to the City Charter that set the framework for the creation of a semi-autonomous public transit authority referred to as the Honolulu Authority for Rapid Transportation (HART). The existing City's governance structure will be modified since HART is now established. The grantee expects some staff to transfer from RTD to HART. The current bus and paratransit systems will be separated from HART and Project-specific management and operation duties.

Staffing Plan Review

The PMOC reviewed the grantee's Project staffing Plan and assessed the reasonableness of hours for each project component over the life of the Project and whether the costs for professional services in the estimate accurately reflects the labor required.

The strategy identify in the Staffing Plan is comprised of hiring locally and training the staff using the PMC and consultant team's expertise. As the abilities of grantee staff increase, the need for PMC staff will diminish. Currently, the grantee has a four-year timetable for replacing the PMC with grantee staff. The current PMC contract expires in November 2014. It is the PMOC's professional opinion that the PMC contract will need to be extended beyond that date in order to allow the PMC to continue augmenting the grantee staff and assisting the grantee with managing the construction, testing, and start up phases of the project. The PMOC recommended that the grantee account for such contract extensions in the Project budget estimate, and record them in the Basis of Estimate.

The PMOC has some concern that the grantee may encounter difficulty acquiring the experienced staff needed for long-term assignments, given Hawaii's high cost of living and distance from the mainland. The PMOC is also concerned that, at present, the grantee does not have a Succession Plan that addresses the transition of the positions currently held by the PMC to

grantee staff, and the dates by which the grantee intends to staff each of the positions. In addition, the grantee will need to update the Staffing Plan, after FTA approval to enter Final Design, to address the new transit authority in detail. Based on initial discussions with the grantee's Administrative Services Officer on February 10, 2011, PMOC learned that the grantee believes that it will need to hire over 200 additional staff over the next few years as HART evolves.

The PMOC had previously identified "capacity" issues as key grantee and PMC positions remained unidentified, vacant or vacated due to employee retention challenges. The grantee has noted that retention challenges include the geographic isolation from the US mainland, salary constraints, capability issues, and other related issues. The PE Entry Readiness Report identified the following key positions that the grantee needed to focus on filling prior to Record of Decision:

- Chief Project Officer – staffed by PMC
- Quality Assurance Manager – staffed by PMC
- System Safety and Security Manager – staffed by PMC
- Real Estate Acquisition Manager – staffed by grantee
- Project Controls Manager – staffed by PMC
- Contracts Administrator – staffed by PMC

The grantee filled the Real Estate Acquisition Manager position, which is one of two key management positions listed above. Its second position, Contracts Administrator, was filled by the PMC. It is the grantee's responsibility to ensure that all key management positions are ultimately filled by its own competent and well-trained employees. While the grantee has made great strides in identifying filling key staff positions, it continues to rely heavily on the PMC to fill the needed positions. It is the PMOC's professional opinion that the grantee should gain more ownership and control by focusing more attention on recruiting and filling its long term positions as the Project enters the Final Design phase, both for long term interests and as a means to reduce costs and consultant fees.

Some of the challenges with regard to key management positions are long term retention, limited salary structure, isolated geography, and, in general, a lack of qualified resource base. The grantee developed a Staffing Plan dated March 11, 2011 and has begun to advertise grantee positions that are currently temporarily filled by the PMC. Inherently, the need for PMC staff will diminish as the grantee fills key management positions. Until such time, it will be necessary for the grantee to continue supplementing its staff with PMC staff. It is the PMOC's professional opinion that the grantee's current Organizational Breakdown Structure and filled staff positions are sufficient to effectively manage the current awarded DB contracts. During the execution of these contracts, the grantee has enough time to continue ramping up staff in order to meet the peak demands of the Project as it continues over the next seven to eight years. This time will also provide an opportunity to recruit, train and transition PMC staff to permanent grantee positions. The PMOC also believes that the resource demands associated with the Final Design phase of a \$5 billion project require full time and concentrated attention and continuity within the grantee's organization for smooth transition into future phases.

The grantee staffing is based on the following budgeted positions:

- Fiscal Year (FY) 2008 – 35 positions
- FY 2009 – 35 positions
- FY 2010 – 79 positions
- FY 2011 – 110 positions
- FY 2012 – 128 positions

The grantee has made an improvement in hiring additional staff needed for the project since the PE Entry Readiness Report. However, more work is needed to achieve the required staffing levels. The grantee has 128 positions budgeted for FY 2012. As of October 2011, the grantee has filled 96 of 97 positions, 27 of which are occupied by PMC staff. The grantee will continue to rely heavily on PMC staff to temporarily fill vacant grantee positions.

The PMOC believes that this trend will continue through Final Design and a portion of construction. It is the PMOC's professional opinion that the passage of the November 2010 Transit Authority Resolution for the creation of a public transit authority will assist the grantee in accelerating the hiring process. The PMOC has established regular monthly meetings with the grantee's Administrator of Controls and Administration to discuss the status of TCC and to assist the grantee with identifying and addressing the most critical TCC issues.

Although the grantee has done an acceptable job of filling key management positions, several support staff positions remain vacant. The PMOC has observed that the grantee rarely achieves internal milestone dates set for the development of procedures, issuance of contracts, or filling staff positions. Upon discussion of these issues with the Deputy Project Officer and Chief Project Officer, the grantee identified the following vacant key management and support staff positions that it must be filled prior to construction:

- Project Labor Agreement (PLA) Officer (key management)
- Contract Officer (key management for Procurement/Contract Officer)
- Design Build Contract Administrator (support staff for Procurement/Contract Officer)
- Design Contract Administrator (support staff for Procurement/Contract Officer)
- Procurement/Contract Assistant (support staff for Procurement/Contract Officer)
- Senior Clerk (support staff for Administration Services Officer)
- CMS Programmer/Data Administrator (support staff for Senior Project Controls Analyst)
- Senior Scheduler (support staff for Lead Project Scheduler)

Physical Resources

The PMOC is to review and determine whether the grantee has the physical resources, adequate office space and equipment, IT architecture, equipment and support, and furnishings to effectively and efficiently manage the Project.

The grantee executed a lease agreement in December 2010 to occupy a second floor of its building. The grantee, PMC, and a portion of the GEC staff will continue to be co-located and will jointly utilize the additional office space. It is the PMOC's professional opinion that the additional floor will provide sufficient space to progress the project effectively and efficiently during the Final Design phase. The grantee will then need to acquire additional office space as the project advances into full construction and start-up due to the projected staffing expectations for HART and the project.

The grantee and its consultants are using new computers with the latest computer operating software, WIFI internet connectivity, internet virtual conference/meeting platforms, MS office, and related engineering and document control software versions. The Local Area Network system contains a backup system and appropriate disaster recovery systems located off-site. The Project computer systems support the grantee's document management system.

History of Performance, Financial Stability, Adequacy of Management Systems, Conformance

The PMOC reviewed the agency's history of performance, financial stability, adequacy of managements systems, and conformance with the terms and conditions of previous contract awards.

The grantee has never managed a New Starts capital improvement project, and for this reason, the grantee has relied heavily on a robust blended organization of expert transit, engineering, and construction management consultants. Similar projects consisting of a varied scope, schedule and budget failed in years past as the public was unwilling to carry the project forward. Public perception and opinion has changed as the public voted in favor of the project and some federal funds have been secured. While the Project has not proceeded as quickly as the grantee and public would like, the FTA and PMOC have acutely monitored and supported the grantee and made appropriate assessment and recommendations when needed.

The Project office and management staff is using new project control management systems as the current City database is too antiquated to meet the latency restrictions and data transfer demands of the Project. The grantee has developed and implemented a new document management and control system and new schedule management database. They are currently developing and refining a budget and cost reporting system that will interface with the document and schedule management systems.

The grantee has never managed a similar design and construction Project in the past and therefore the PMOC is not able to compare or evaluate the grantee's contract conformance of previous terms and conditions.

PMOC Recommendations –

- (1) The grantee should provide direct support to the Executive Director through a Deputy (or a combination of executive managers). This recommendation should be addressed once the permanent Executive Director is identified.

The PMOC has observed that the Interim Executive Director is spending a large amount of time on business pertaining to the institution of HART. HART will need to complete a number of steps during its first year that will include creating periodic reports to the Board of Directors on the status of existing contracts, e.g., the progress of work being performed, change orders executed, and contract budget and contingency status. The Deputy for the Executive Director (or a combination of executive managers) should be a grantee hire that provides highly responsible and complex assistance and support to the Executive Director in the

direction and management of the Corporation Council, Chief Project Officer and Deputy Project Officers. He or she would aid in the analysis and implementation of policies and procedures and would provide highly responsible and complex management and policy support to the Executive Director. The Executive Director or the Deputy Executive Director should have extensive knowledge and experience in mass transit construction and operations. Many other transit agencies have a Deputy and it is the PMOC's professional opinion that the Project needs this added position in order to assist the Executive Director in establishing HART and maintaining management control of the Project during the next few years.

- (2) The grantee should develop a succession plan for those key management positions that may be considered short term (three years or less) in order to ensure a successful "knowledge transfer" of project consultants' expertise to the grantee. The Succession Plan can be developed during the Final Design phase but before FFGA application preparation and should be directly associated with the grantees staffing plan.

The PMOC has identified the Chief Project Officer, Deputy Project Officer Engineering and Construction, Procurement/Contracts Officer and Assistant Project Officer Core Systems as critical positions that could be considered short term and may need to be filled by the grantee in order to maintain continuity, management control, and grantee ownership of the project. The grantee will need to identify other short-term key management positions and include them in the succession plan.

- (3) The grantee should hire a recruiting consultant to assist with staffing plan, recruiting, training, transition planning and execution, and employee retention.

The PMOC has discussed with the grantee the difficulty of hiring to fill project staff positions. The grantee has indicated that they will hire a consultant to assist the Human Resources Department with job classifications and hiring additional staff, which will enhance the Project organization and staffing requirements related to the Administrative Services Officer position and department staff. This contract should be a top priority of the grantee.

- (4) The PMP, PMP companion documents, and Project Control procedure documents must use consistent and traceable vernacular such as correct position titles, deliverable document titles, procedure titles, etc. These changes can be made in subsequent document revisions during the Final Design phase but prior to FFGA application activities.
- (5) The grantee should develop a Project Responsibility Assignment Matrix similar to Figure 7 in the PMP for the project procedures, Construction Management Plan, Resident Engineer Manuals for DB and DBB contracts and Interface Management Plan in order to better document and clarify the roles and responsibilities,

functions, and interface required among the blended organization of city department, city Project, and consultant staff.

4.4.2 Grantee's Approach, Understanding, and Ability to Perform Work

Project Controls (schedule, budget, and risk management)

Project Control includes the development, update and variance analysis of the Project scope, schedule, and budget. Subset project control components that interface closely with the primary control categories include contract administration, document control, configuration management and risk management. The PMOC addressed the grantee's organization and staff members in the previous report section noting several issues related to project control deliverables and hiring a new Project Controls Manager in May 2011. The PMOC reviewed numerous project control plans and procedures as part of the OP 34 (Schedule Review), OP 40 (Risk and Contingency Review), the OP 20 (PMP Review), and the OP 21 (TCC Review). The PMOC and the grantee concentrated heavily on the development and review of the project control procedures, as they were required early on to support the various FTA PMOC deliverable reports. Consequently, the grantee has successfully developed a sufficient set of project control procedures to adequately cover scope, schedule, and budget controls. The grantee has yet to implement all of the procedures but has established a well grounded plan to do so as they are completing revisions to the MPS and finalizing Cost Report formats in preparation of entering the Final Design and construction phases. The PMOC emphasized the importance of developing a robust and flexible cost and schedule WBS to support the implementation of performance measurement and variance reporting tailored for the multiple reporting audiences among the Project. The PMOC is closely monitoring the grantee's project control department and has included several recommendations in the schedule review and risk assessment reports to the FTA.

FTA Reporting Requirements

The grantee has demonstrated thus far a cognitive and responsive protocol to FTA and PMOC requests. They have complied all FTA and PMOC guidelines, circulars and CFR's during the PE phase in order to sustain federal eligibility. The grantee is submitting monthly reports and has prepared and refined their first Quarterly Review Meeting report package. The grantee and their consultant team has established a good working relationship with the PMOC and have demonstrated a positive attitude and cooperative spirit during the document review process in support of the entry into the Final Design phase.

Procurement and Compliance

Administration of contracts is the responsibility of the Procurement/Contract Officer (PCO) under the supervision of the Deputy Project Officer, Administration and Control. With the exception of the PMC contract, which is the subject of a Procurement Systems Review finding, the PMOC has determined the grantee has complied with the procurement of architectural and engineering service contracts in accordance to the FTA Circular 4220.1F, Third Party Procurement Guidelines. Equipment and materials services are procured through Request for Proposal or Request for Bid.

While the FTA and PMOC have questioned the timing of design-build contract procurements in the past, prior to receiving an ROD, the PMOC has determined the grantee has complied with all federal requirements with exception of the PMC contract, as noted in Section 4.4.1.

Community Relations Program

The Department of Customer Service (DCS) is responsible for providing the public with information about City programs and is the primary liaison with community groups and organizations that are or may be affected by the Project. The DCS and grantee work closely with the Hawaii Community Development Authority and neighboring communities along the corridor. The grantee's Public Information Officer (PIO) oversees all Project related outreach and canvasses information using mailers, brochures, radio and television, blogs and internet media. The PIO also coordinates with the Oahu Metropolitan Planning Office (MPO) public involvement program through the Citizen Advisory Committee (CAC). The CAC members include community organizations, professional associations, neighborhood boards, special interest groups, and transportation providers.

The PIO and the grantee have been very proactive with public outreach efforts as demonstrated by their monthly reports to the FTA and PMOC.

Project Property Management

The grantee, City and County of Honolulu, accounts and manages property as a routine business protocol so the transition of managing such property and inventory for the Project was not difficult. The grantee tracks and records property inventory that is maintained on the City database. Real property and easements along the corridor are managed by the real estate acquisition department and coordinated with the HDOT and City right of way maintenance department responsibilities.

Force Account Plan

The grantee submitted a Force Account Plan dated January 21, 2011. The PMOC provided review comments and determined the Plan was acceptable to enter the Final Design phase.

Safety and Security

The grantee has a well-qualified System Safety and Security Manager and has developed a Safety and Security Management Plan (SSMP) and Safety and Security Certification Plan (SSCP). Both the SSMP and SSCP were initially submitted in April 2010. The FINAL DRAFT of Revision 2.0 of the SSMP was submitted to the PMOC for review on January 14, 2011. The PMOC provided the grantee with extensive comments of the FINAL DRAFT on February 14, 2011. The grantee and the PMOC also met the week of April 11, 2011 to discuss safety and security issues, including the update of these two documents. Updates of the SSMP and SSCP were submitted by the grantee on June 1, 2011. The PMOC has determined that the SSMP and SSCP are acceptable to enter the Final Design phase.

HDOT has been designated as the State Oversight Agency (SOA). The grantee and HDOT are working together as the grantee is currently issuing an RFP for consultant services to prepare program standards in support of SOA duties and responsibilities during the Project. It is the PMOC's professional opinion that the schedule to procure a consultant and for the consultant to develop the SSPPS could take up to a year. The PMOC received a copy of the SOA's draft program schedule on December 3, 2010. The SOA's draft program schedule is outdated and the PMOC has requested an updated program schedule to be submitted. A new Director of

Transportation for HDOT was appointed and has identified an interim SOA lead and anticipates hiring a full-time SOA Project Manager in early 2012. The SOA will be responsible for developing and maintaining a System Safety Program Plan Standard (SSPPS) during the Final Design phase.

Full Funding Grant Agreement (FFGA)

The grantee plans to develop and submit an FFGA application in 2012 once they are in Final Design. The grantee understands it will need to provide revised schedule, budget, and risk assessment documents to support the PMOC's "refresher" reports in support of the FFGA application and recommendation to FTA. An FFGA Roadmap will be developed and will serve as a reference baseline to track progress as the FFGA application and attachments are assembled.

Grantee Understanding of Title VI Requirements, Real Estate Acquisition, and Agreements

It is the PMOC's professional opinion that the grantee is adhering to Title VI requirements. The procurement department has thoroughly evaluated opportunities to include small business and disadvantage business in their contract packaging and delivery method strategies. The DTS Public Transit Division is currently responsible for preparing and submitting the Title VI program required by FTA Circular 4702.1A once every three years, unless otherwise requested by the FTA. As a recipient of Federal funds, the DTS is responsible for ensuring that the information is submitted to the FTA as part of its Title VI Program.

The PMOC has monitored and witnessed an extensive amount of Americans with Disabilities Act (ADA) considerations through the preliminary engineering process evident by the standards, drawings, and consideration of transit station configurations, strategic location of platform station elevators, incorporation of emergency egress from elevated platforms, parking proximity to stations, and preliminary train boarding configurations.

The PMOC and its real estate acquisition expert consultant interviewed the grantee's Real Estate Acquisition Manager and key department staff and determined have demonstrated a clear and thorough understanding of the Uniform Property Acquisition and Relocation Act of 1970. The grantee has developed an approved RAMP and has developed a detailed schedule network specific to the acquisition of partial and full takes, and easements. The PMOC did determine the grantee's real estate acquisition department has capacity limitations and requires additional resources to meet peak demands. During a Real Estate Workshop, the PMOC recommended that the grantee hire a consultant to assist with real estate activities. RFP Part 1 was issued on April 1, 2011, and RFP Part 2 was issued on September 8, 2011. The grantee anticipates issuing an NTP in November 2011.

The grantee's PMP best documents their understanding and policies for Agreements and have established a clear organization breakdown structure and responsibility assignment matrix to distinguish how federal, state and local agreements will be developed and managed. The Executive Director is responsible for project level interface between agencies where necessary. Key cooperating agencies include:

- Federal Highway Administration (FHWA)
- Federal Aviation Administration (FAA)

- U.S. Department of Defense (USDOD) – U.S. Army Garrison Hawaii & U.S. Naval Base Pearl Harbor
- Hawaii Department of Transportation (HDOT)

Participating federal agencies include:

- U.S. Department of Agriculture (Natural Resource Conservation Service)
- U.S. Department of the Interior (Fish & Wildlife Service, National Park Service, U.S. Geological Survey Pacific Island Ecosystems Research Center)
- U.S. Department of Homeland Security (U.S. Coast Guard)
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency
- U.S. Federal Emergency Management Agency

Participating state agencies include:

- Hawaii Community Development Authority
- Department of Education
- Department of Accounting and General Services
- Department of Land and Natural Resources
- Department of Defense
- Department of Hawaiian Home Lands
- Department of Health
- Department of Business
- Office of Hawaiian Affairs
- University of Hawaii
- Oahu Metropolitan Planning Organization

The Department of Planning and Permitting (DPP) Building Code Branch reviews designs for compliance with building codes prior to permit issuance. This would include Americans with Disabilities Act (ADA) review. The grantee recommended its third-party consultants review the designs for building code and ADA compliance to streamline the permitting process. The determination of whether City building permits are to be issued would then be made jointly by the DPP Director and the DTS Director. The City must ensure that the staffing levels proposed by the GEC for the Project will not be used to perform any of the DPP reviews. The PMOC recommends that a separate and distinct group be utilized by the GEC so that TCC is not compromised on the Project.

Honolulu Authority for Rapid Transportation (HART)

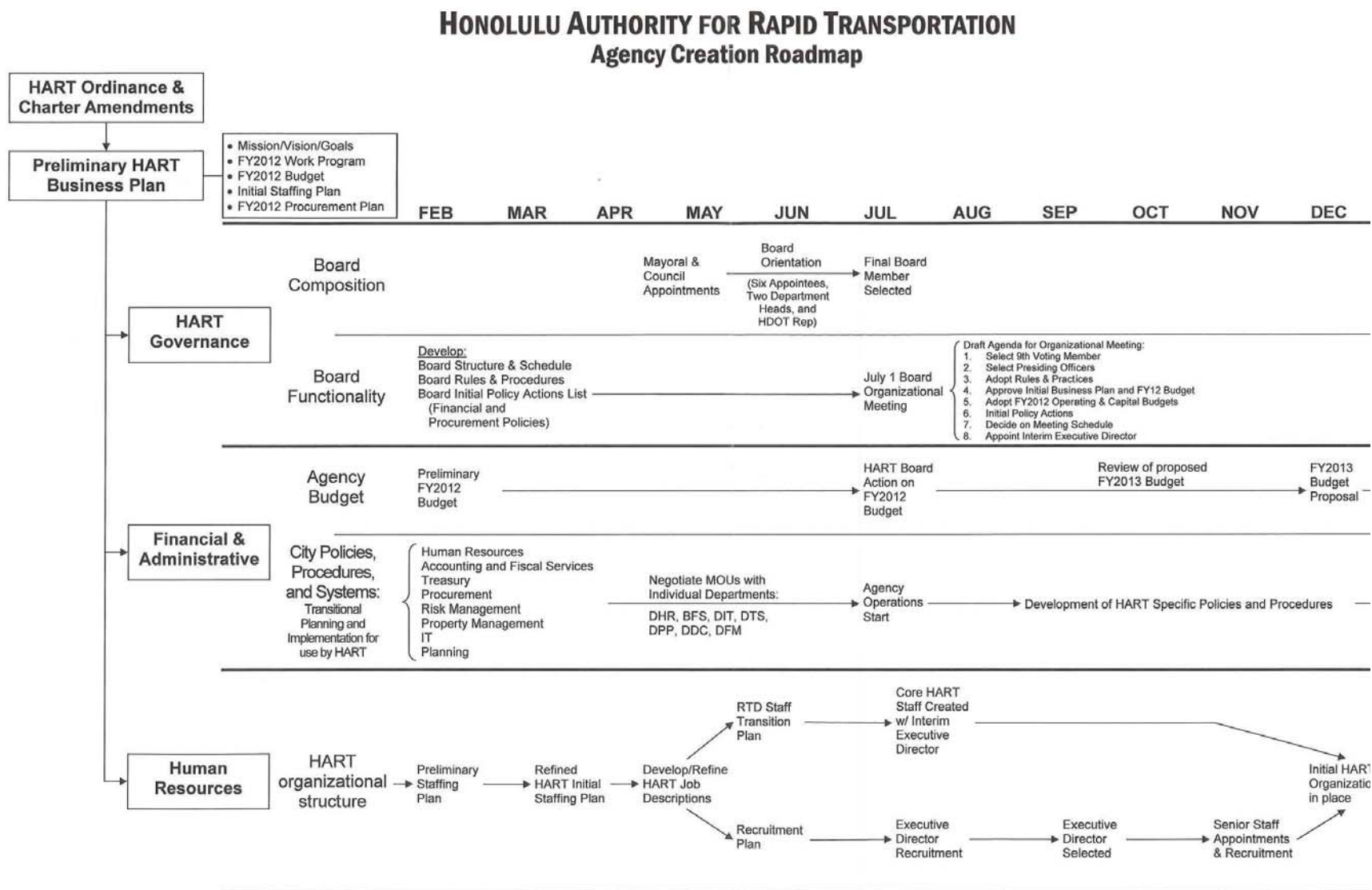
On July 1, 2007, the City and County of Honolulu formed the Rapid Transit Division (RTD), which falls under the Department of Transportation Services (DTS). The RTD was responsible for the management and oversight of the project from PE through construction, including all actions and project deliverables required by the FTA New Starts Program, and will interface with other grantee departments as needed. The project staff consisted of full-time grantee employees supplemented with staff from the PMC. The grantee anticipated transitioning some of the PMC staff, or positions held by the PMC, to the grantee once the project is complete and operational.

This transition process included mentor-protégé type collaboration and training during the last several years of the Project in preparation for management and operation of the starter system.

During the November 2010 election, an amendment to the Revised Charter of the City and County of Honolulu 1972 (as amended) was approved by voters to allow for the creation of a public transit authority. The new authority is responsible for the planning, construction, operation, maintenance, and expansion of the grantee's fixed guideway mass transit system. This authority, which is named the Honolulu Authority for Rapid Transportation (HART), became effective on July 1, 2011. PMP Revision 4, which was submitted for review in April 2011, supports the grantee's request to enter Final Design but only addresses the new transit authority in general terms. The grantee will require additional time to fully vet the impacts of a new authority on its staff and management approach. The grantee plans to issue a PMP revision to address the impacts of HART after receiving authority to enter into the Final Design Phase by the FTA.

The new transit authority is configured similar to the Board of Water Supply (BWS). The BWS has full and complete authority to manage, control, and operate the public water systems on Oahu and the properties of these systems. As a semi-autonomous city agency, HART will be governed by seven appointed members of its Board of Directors. The Board will set policies and prescribe regulations for the planning, construction, operation, maintenance, and expansion of the grantee's fixed guideway mass transit system. The Board also appointed an Interim Executive Director and eventually will select a permanent Executive Director. The Board, whose members have five-year staggered terms, includes three members appointed by the Mayor, three members appointed by the City Council, and one member appointed by the voting members. The remaining three directors are ex-officio (by virtue of office or position): The State Director of Transportation (voting member), the Director of Transportation Services (voting member) and the Director of Planning and Permitting (non-voting member). The grantee and the PMOC expect an increase in resource demand and some strain on certain staff members as the HART Board and new staff members develop and implement new procedures and policies. A new set of risks and challenges associated with the HART Board and its interface with grantee staff will soon be injected into the Project. Such risks may adversely affect cost or time and will be carefully monitored by the PMOC. Figure 3 presents a roadmap of activities that were undertaken for the establishment of HART.

Figure 3. HART Roadmap



Updated 04/15/11: 3:08

PMOC Recommendations –

- (1) The grantee should hire a real estate acquisition consultant to meet peak resource demands and provide expert consultant advice as needed.
- (2) The grantee should ensure that a separate and distinct group within the GEC is utilized to perform the reviews for building code and ADA compliance to streamline the permit process.

4.5 Conclusion

The PMOC has some concern that the grantee may continue experiencing difficulty attracting and retaining the experienced staff needed for long-term Project assignment and permanent grantee employment (post-Project) given Hawaii's geographic isolation, salary limits, and high cost of living relative to the mainland. The grantee should adhere to the staffing plan to address the transition of staff during the Final Design and construction phases for positions currently occupied by PMC staff to grantee staff.

The grantee must strive to transition the key management positions currently occupied by the PMC as early as possible. The grantee should focus on transitioning the key positions of Chief Project Officer, Project Controls Manager, and Contracts Administrator, in order for the grantee to have more ownership and maintain stronger continuing control of the project without having to rely too heavily on the PMC.

The PMOC will continue monitoring the grantee's project management process to ensure that it is effectively managing the Project and continuing fiscal responsibility and accountability for all decisions affecting project design, cost, and schedule, until all key management positions transition to full-time grantee staff. The transition from PMC staff to full-time grantee staff must be closely monitored by the PMOC throughout the Final Design phase of the project.

Table 8 summarizes the TCC requirements for entry into Final Design and the PMOC's opinion of whether those requirements have been sufficiently addressed by the grantee.

Table 8. TCC Checklist

TCC Documents Checklist	Entry to FD	Req't. Satisfied	Comment
Description of Grantee's Approach to Project covering:			
AA through PE and approval into FD			
Entry to FD through FFGA and Bidding of Major Contracts	•	Yes	
Bidding of Major Contracts through Construction, Testing, Start-up, Revenue Operations			Later phase
Organizational Charts			
Agency	○	Yes	Must be updated in early FD
Project Team (agency staff and consultants)	•	Yes	Must be updated in early FD
Staff Qualifications/Experience Chart	•	Yes	With noted exceptions for vacant positions

TCC Documents Checklist	Entry to FD	Req't. Satisfied	Comment
Description of roles, responsibilities, interfaces among key project team members through responsibility matrix	○	Yes	
Staffing Plan - Labor Hour Distribution over Life of Project	●	Yes	
Copies of Relevant RFPs / Contracts / Agreements	▲	Yes	
Description of Management Processes and Procedures:			
Agency Board decision-making authority	●	Yes	
Agency Leadership and Executive Staff decision-making authority	●	Yes	
Project Leadership and Executive Staff decision-making authority	●	Yes	
Legal services for contracts, ADR	○	Yes	
Financial Management, Funding Approval processes and authorities	○	Yes	
Procurement services	○	Yes	
Community outreach and relations, interface with State and Local Agencies and Media; Public Hearings	○	Yes	
Resumes of project team members			
Project Management:			
Agency Leadership	○	Yes	
Project Management Lead	○	Yes	
Legal Services Lead	○	Yes	
Financial Management and Funding Leads	○	No	Position vacant
Grants Management Lead	○	Yes	
Procurement Lead	○	Yes	
Agency Force Account Work Lead	○	Yes	
Community Outreach Lead	○	Yes	
Environmental Assessment and Mitigation Leads:			
Environmental study and NEPA document			Complete
Environmental Coordination with Design / Monitoring	●	Yes	
Environmental Mitigation Monitoring During Construction			Later phase
Travel Forecasting Lead:	●	Yes	
Operations Planning, Fleet Management Planning Leads	●	Yes	
Design Team Lead:			
Civil	●	Yes	
Structural	●	Yes	
Guideway and Track Design	●	Yes	
Architectural	●	Yes	
Mechanical	●	Yes	
Electrical	●	Yes	
Plumbing	●	Yes	
Communications	●	Yes	
Vehicle Design and Manufacture	●	Yes	
Special Equipment Design and Manufacture	●	Yes	
Investigation and Testing lead	●	Yes	
Coordination with Third Parties Lead	○	Yes	
Quality Assurance and Quality Control lead	○	Yes	
Project Controls:			
Project controls lead	○	Yes	

TCC Documents Checklist	Entry to FD	Req't. Satisfied	Comment
Cost Estimating and Cost Estimating Review Leads	○	Yes	
Scheduling and Schedule Review Leads	○	Yes	
Risk Assessment and Mitigation Lead	○	Yes	
Construction, Permits, Testing, Start-up Leads:			
Construction Administration			Later phase
Construction Management			Later phase
Acquisition of Permits			Later phase
Testing of systems and vehicles			Later phase
Start-up/Transition into Revenue Operations:			
Real Estate Lead	○	Yes	
Safety Review Lead	○	Yes	

NOTE: ▲ – Preliminary information required;

● – Element to be completed;

○ – Element to be modified or augmented with additional information as necessary.

It is the PMOC's professional opinion that the grantee has demonstrated its Technical Capacity and Capability to execute the project during the Preliminary Engineering phase and its readiness to enter the Final Design phase. Nevertheless, the PMOC has identified several recommendations the grantee must address. The recommendations are organized by the timeframe in which they must be addressed: prior to Final Design; or during Final Design.

4.6 Recommendations

There are no recommendation conditions that should be addressed by the grantee prior to entry into Final Design phase.

The following Recommendations can be addressed during the Final Design phase:

- (1) The grantee should provide direct support to the Executive Director through a Deputy (or a combination of executive managers). This recommendation should be addressed following identification of a permanent Executive Director.
- (2) The grantee should develop a succession plan for those key management positions that may be considered short term (three years or less) in order to ensure a successful "knowledge transfer" of project consultants' expertise to the grantee. The Succession Plan can be developed during the Final Design phase but before FFGA application preparation and should be directly associated with the grantees staffing plan.
- (3) The PMP, companion documents, and Project Control procedure documents must use consistent and traceable vernacular such as correct position titles, deliverable document titles, procedure titles, etc. These changes can be made in subsequent document revisions during the Final Design phase but prior to FFGA application activities.
- (4) The grantee should hire a recruiting consultant to assist with staffing plan, recruiting, training, transition planning and execution, and employee retention.
- (5) The grantee should develop a Project Responsibility Assignment Matrix (RAM) similar to Figure 7 in the PMP in order to better document and clarify the roles and responsibilities, functions, and interface required among the blended

- organization of city department, city Project, and consultant staff.
- (6) The grantee should hire a real estate acquisition consultant to meet peak resource demands and provide expert consultant advice as needed.
 - (7) The grantee should ensure that a separate and distinct group within the GEC is utilized to perform the reviews for building code and ADA compliance to streamline the permit process.

Table 9 summarizes the PMOC findings and recommendations with regard to staffing requirements for the Project.

Table 9. Staffing Requirements

Position	Grantee or Consultant	Date Required
Deputy Executive Director	Grantee	After permanent Exec. Director is identified
Deputy Director of Finance	Grantee	After permanent Exec. Director is identified
Claims Avoidance and Dispute Resolution (claims) Specialist	Grantee or Consultant	Prior to start of construction
Project Labor Agreement Officer (key management)	Grantee	Prior to start of construction
Contract Officer (key management for Procurement/Contract Officer)	Grantee	Prior to start of construction
Design Build Contract Administrator (support staff for Procurement/Contract Officer)	Grantee or Consultant	Prior to start of construction
Design Contract Administrator (support staff for Procurement/Contract Officer)	Grantee or Consultant	Prior to start of construction
Procurement/Contract Assistant (support staff for Procurement/Contract Officer)	Grantee or Consultant	Prior to start of construction
Senior Clerk (support staff for Administration Services Officer)	Grantee or Consultant	Prior to start of construction
CMS Programmer/Data Administrator (support staff for Senior Project Controls Analyst)	Grantee or Consultant	Prior to start of construction
Senior Scheduler (support staff for Senior Scheduling Manager)	Grantee or Consultant	Prior to start of construction

5.0 OP 24: QA/QC REVIEW

The purpose of section of the report is to provide the PMOC's assessment of the grantee's *Quality Management Plan*, Revision 0, dated January 11, 2011.

The objective of this review is to assess and evaluate the adequacy and soundness of the grantee's QA/QC program and the grantee's implementation of such program over the course of the Project. The following are objectives of the OP 24 review:

- Quality Management
 - verify that the grantee has established a documented Quality Management Program of procedures and activities to support the entire grantee organization, as well as the project
 - verify that the program can ensure satisfaction of project quality objectives related to the control of documents, design, procurement, construction, start-up, and operations
 - evaluate the grantee's plan for quality management activities, capabilities regarding the establishment of quality systems, identification and evaluation of quality problems, and provision of solutions
 - verify that quality activities are/were carried out
 - evaluate the grantee's actual implementation of quality management activities and the documentation thereof
 - verify and assess that the grantee has adequately defined its quality policy and the quality responsibilities of the project team
 - ensure that the grantee has assigned qualified personnel, independent of those having direct responsibility for the work being performed, to be responsible for QA/QC functions within the project
 - verify and ensure that such personnel are implementing and maintaining the grantee's quality policy
 - verify that the grantee has established an internal audit to ensure that the elements of the quality management program are functioning as intended
 - review the grantee's quality control and assurance procedures and determine the adequacy of such procedures
- Document Control
 - ensure that the grantee has an established document control program within its QA/QC plan and assess the adequacy of such control and assurance procedures and requirements
 - ensure that the grantee has specified a document control procedure, including document review, distribution, and storage, that incorporates the design consultants and various construction contractors
 - confirm that the grantee has in place adequate quality assurance procedures to ensure that document controls are in place and are being implemented
- Design Control
 - ensure that the grantee has an established Design Control Plan within its QA/QC plan and assess the adequacy of such quality control and assurance procedures and requirements

- ensure that the grantee has specified procedures for design verification and design review and assess the adequacy and efficacy of these control and assurance procedures
- confirm that the consultant(s) responsible for design have established procedures for controlling their design processes
- confirm that the grantee has specified design review procedures for all design consultants and procedures for design and/or specification changes, including signoff and documentation of such changes
- ensure that the grantee has documented procedures and requirements regarding “as-built” documents
- Procurement
 - ensure that the grantee has procedures to ensure competition in the bidding
 - review and assess the grantee’s procedures for ensuring that quality control requirements are included within proposals/bids and formally communicated to potential consultants/contractors/subcontractors
 - review the grantee’s procedures for ensuring that procurement documents are reviewed and approved by a designated authority prior to release, with special attention to the review of the grantee’s construction contract documents, including general and special conditions and quality control requirements
 - review the grantee’s requirements for product identification and traceability to be placed in contract documents, where appropriate, for equipment manufacturers or others supplying products for the project
 - review and assess the adequacy of the grantee’s requirements for product identification and traceability for products and materials turned over to the owner at project conclusion
- Construction/Inspection
 - review and assess the adequacy of the grantee’s requirements for a quality control inspection and testing program through all phases of the work, including inspection and testing procedures for special processes and requirements for calibration and maintenance of inspection, measuring, and/or test equipment
 - ensure that the grantee’s QA/QC plan adequately indicates and describes the types of inspection and testing required and the standards to be met and provides reference to such testing and standards requirements within the project specifications
 - review and assess the adequacy of the grantee’s procedures for handling nonconforming work
 - verify that such procedures define responsibilities and/or conditions that would cause work to stop and documentation procedures to record nonconforming work
 - review and assess the adequacy of the grantee’s procedures for taking corrective action
- Operations, Startup, and Testing
 - review and assess the adequacy of the grantee’s control procedures for the testing of systems, vehicles, and service equipment, as well as the grantee’s training procedures for operating and maintenance to ensure a smooth transition to operations
 - confirm that the grantee has in place adequate quality assurance procedures to ensure successful implementation of the training program

5.1 PMOC Assessment

The PMOC followed the FTA OP 24 to perform a review of grantee's QMP, whose Table of Contents is presented below.

Table 10. QMP Table of Contents

Quality Control / Quality Assurance Table of Contents	In AA, and/or Requesting Entry to PE	In PE, Advanced PE, and/or Requesting Entry to FD	City Compliance
Introduction	●	○	✓
Quality Policy	●	○	✓
Quality Objectives	●	○	✓
Quality Management Responsibility	●	○	✓
Quality Management Training Procedures	●	○	✓
Project Document Review, Distribution, Storage Procedures	●	○	✓
Quality Records Distribution, Maintenance, Storage Procedures	●	○	✓
Document Control Quality Assurance Procedures	●	○	✓
Design Verification Procedures	●	○	✓
Design Review Procedures for Drawings and Specifications	●	○	✓
Design Change Procedures	▲	●	✓
Design Control Quality Assurance Procedures	●	○	✓
Construction Procurement Procedures, Identification of Contract Requirements		●	✓
Construction Contract Document Review Procedures including General and Supplementary Conditions		●	✓
Equipment and Vehicle Procurement Procedures		●	✓
Product Identification		●	✓
Product Identification Procedures		●	✓
Inventory Control Procedures		●	✓
Routing Documentation Procedures		●	✓
Special Process Procedures		●	✓
Construction Inspection Procedures (project site and fabrication site)		●	✓
Measuring and Test Equipment Quality Control Procedures		●	✓
Testing Procedures (soils, materials)		●	✓
Nonconformance Procedures		●	✓
Corrective Action Procedures		●	✓
Procurement/Construction Quality Assurance Procedures		●	✓
Testing Procedures for Systems, Vehicles, Service Equipment		●	✓
Training Procedures		●	✓
Operations, Startup, Training Quality Assurance Procedures		●	✓

5.1.1 Quality Management Program

Requirement

Verify that the grantee has established a documented Quality Management Program of procedures and activities to support the entire grantee organization, as well as the project.

PMOC Assessment

The grantee has prepared and issued the Quality Management Plan, Revision 0 dated January 11, 2011. The QMP is structured around the 15 essential elements of the FTA QA/QC Guidelines, which describes and documents the quality policy that will be used throughout the project (see Table 11). The roles and responsibilities of the Executive Director, System Safety and Security Manager, Quality Assurance Manager, Chief Project Officer, Deputy Chief Project Officer of Administration and Controls, and the Deputy Chief Project Officer of Engineering and Construction are identified along with inclusion of an overall project organization chart.

Table 11. FTA QA/QC Guidelines – 15 Essential Elements

FTA Element	OP 24 Requirement	QMP
Management Responsibility	6.1 Quality Management Program	2 – Management Responsibility
Documented Quality Management System	6.1 Quality Management Program	3 – Documented Quality Management System
Design Control	6.3 Design Control	4 – Design Control
Document Control	6.2 Document Control	7 – Document Control
Purchasing	6.4.1 Procurement	5 – Purchasing
Product Identification and Traceability	6.4.1 Procurement	9 – Product Identification and Traceability
Process Control	6.4.1 Procurement	10 – Process Control
Inspection and Testing	6.4.2 Construction/Inspection	11 – Inspection and 12 – Testing
Inspection, Measuring, and Test Equipment	6.4.2 Construction/Inspection	13 – Inspection, Measuring, and Test Equipment
Inspection and Test Status	6.4.2 Construction/Inspection	15 – Inspection and Test Status
Nonconformance	6.4.2 Construction/Inspection	16 – Nonconformance
Corrective Action	6.4.2 Construction/Inspection	17 – Corrective Action
Quality Records	6.2 Document Control	18 – Quality Records
Quality Audits	6.1 Quality Management Program	19 – Quality Audits
Training	6.5 Operations, Startup and Training	20 – Training

Requirement

Verify that the program can ensure satisfaction of project quality objectives related to the control of documents, design, procurement, construction, start-up, and operations.

PMOC Assessment

The QMP fully identifies and describes the procedures that are/will be used for document control, design, procurement, construction, start-up, and operations.

Requirement

Evaluate the grantee's plan for quality management activities, including capabilities regarding the establishment of quality systems, identification and evaluation of quality problems, and provision of solutions.

PMOC Assessment

The QMP fully identifies and describes the quality management activities regarding the establishment of quality systems, identification, and evaluation of quality problems, and provision of solutions throughout the QMP. The identification and evaluation of quality

problems is found in Chapter 15, *Inspection and Test Status*, Chapter 16, *Nonconformance*, and Chapter 17, *Correction Action*.

Requirement

Verify that quality activities are/were carried out.

PMOC Assessment

The grantee submits a monthly report to the FTA that provides a summary of all quality activities for the month.

Requirement

Evaluate the grantee's actual implementation of quality management activities and the documentation thereof.

PMOC Assessment

Implementation of quality management activities is documented through the quality audit process. This process is fully identified and described in Chapter 19, *Quality Audits*. A summary of Surveillance Audits is included in each monthly report prepared by the grantee and submitted to FTA.

Requirement

Verify and assess that the grantee has adequately defined its quality policy and the quality responsibilities of the project team.

PMOC Assessment

The quality policy is defined throughout the QMP. The roles and responsibilities of the or Executive Director, System Safety and Security Manager, Quality Assurance Manager, Chief Project Officer, Deputy Chief Project Officer of Administration and Controls, and the Deputy Chief Project Officer of Engineering and Construction are identified along with inclusion of an overall project organization chart. The quality policy and responsibilities identified in this QMP are acceptable and conform to FTA guidelines.

Requirement

Ensure that the grantee has assigned qualified personnel, independent of those having direct responsibility for the work being performed, to be responsible for QA/QC functions within the project. Verify and ensure that such personnel are implementing and maintaining the grantee's quality policy.

PMOC Assessment

The grantee has engaged the use of a Program Management Consultant (PMC), InfraConsult LLC, and a GEC, PB Americas, to assist in the day-to-day management of the Project and supplement the grantee team. The grantee and consultant staff assigned to this project is comprised of qualified personnel, independent of those having direct responsibility for the work being performed. The RTD team is responsible for implementing and maintaining the quality policy, as defined throughout this QMP.

Requirement

Verify that the grantee has established an internal audit to ensure that the elements of the quality management program are functioning as intended. Review the grantee's quality control and assurance procedures and determine the adequacy of such procedures.

PMOC Assessment

The internal audit procedures are identified and defined in Chapter 19, *Quality Audits*, and Appendix 10, *QIP 19 – AUDIT PROCEDURE*, of the QMP. Procedures include planning, procedure, and result reporting requirements. A sample checklist and audit report is included to assist the auditors in conducting consistent audits. The quality control procedures identified in this QMP are acceptable and conform to FTA guidelines.

PMOC Assessment of the Quality Management Program

The PMOC finds that this QMP provides the information necessary to understand the grantee's quality management program objectives and is acceptable to advance the project into Final Design.

5.1.2 Document Control

Requirement

Ensure that the grantee has an established document control program within its QA/QC plan and assess the adequacy of such control and assurance procedures and requirements.

PMOC Assessment

The document control program is identified and defined in Chapter 7, *Document Control*, and in Appendix 9, *Project Wide Document Control Procedure (No. 2, PA-04)* of the QMP. The document control procedures identified in this QMP are acceptable and conform to FTA guidelines.

Requirement

Ensure that the grantee has specified a document control procedure, including document review, distribution, and storage, that incorporates the design consultants and various construction contractors.

PMOC Assessment

The document control procedures are identified and defined in Chapter 7, *Document Control*, and in Appendix 9, *Project Wide Document Control Procedure (No. 2, PA-04)* of the QMP. These procedures apply to all project documents, including those generated by the design consultants and construction contractors.

Requirement

Confirm that the grantee has in place adequate quality assurance procedures to ensure that document controls are in place and are being implemented.

PMOC Assessment

The quality assurance procedures included in this QMP ensure that document controls are in place and are being implemented by project staff.

PMOC Assessment of Document Control

The PMOC finds that this QMP provides the information necessary to understand the grantee's document control objectives and is acceptable to advance the project into Final Design.

5.1.3 Design Control

Requirement

Ensure the grantee has an established Design Control Plan within its QA/QC plan and assess the adequacy of such quality control and assurance procedures and requirements.

PMOC Assessment

The design control procedures are identified and defined in Chapter 4, *Design Control*, and in Appendix 1, Contract SP 4.7, *Quality Management*, of the QMP. The design control procedures identified in this QMP are acceptable and conform to FTA guidelines.

Requirement

Ensure that the grantee has specified procedures for design verification and design review and assess the adequacy and efficacy of these control and assurance procedures.

PMOC Assessment

Design verification and design review procedures are identified in Chapter 4, *Design Control*, and further defined by Appendix 1, Contract SP 4.7, *Quality Management*, of the QMP. The adequacy and efficacy of these control and assurance procedures are evident in the quality audits that will be performed on project documents. The quality audit procedures are identified and defined in Chapter 19, *Quality Audits*, and Appendix 10, *QIP 19 – Audit Procedure*. Submittals of the design documents are stipulated to occur at specific points during the design process and a detailed review plan is outlined in Appendix 1. The procedures identified for design verification and review in this QMP are acceptable and conform to FTA guidelines.

Requirement

Confirm that the consultant(s) responsible for design have established procedures for controlling their design processes.

PMOC Assessment

Chapter 3, *Documented Quality Management System*, requires that contractors, consultants, and suppliers providing design, engineering, construction, items, and services to the grantee shall be required to submit a Quality Assurance Plan (QAP) that meets the requirements of this QMP. The submitted QAPs will be reviewed by the grantee, through the GEC, and must be approved prior to use. This is an ongoing process as the grantee is currently in the process of awarding the various project contracts.

Requirement

Confirm that the grantee has specified design review procedures for all design consultants and procedures for design and/or specification changes, including signoff and documentation of such changes.

PMOC Assessment

Design review procedures, along with a template of the standard review comment form, is found in Appendix 12, *CMS Reviewer Comment Sheet*, of the QMP. A “Review Comments Log” of all review comments received is kept in the Contract Management System, which is maintained by the grantee. A separate “Change Management Log” is also maintained to track the cost of design changes. However, the QMP does not contain an explanation of how either of these two logs is utilized or maintained.

Requirement

Ensure that the grantee has documented procedures and requirements regarding “as-built” documents.

PMOC Assessment

Procedures and requirements for as-built documents are identified and defined in Appendix 9, *Project Wide Document Control Procedure*, of the QMP.

PMOC Assessment of Design Control

The PMOC finds that this QMP provides the information necessary to understand the grantee’s document control objectives and is acceptable to advance the project into Final Design.

5.1.4 Procurement

Requirement

Ensure that the grantee has procedures to ensure competition in the bidding.

PMOC Assessment

Procurement procedures for both professional services and construction contracts are included in Appendix 7, *Procurement Code 01.4 – Construction Contracts*, and Appendix 8, *Procurement Code 01.5 – Professional Services Contracts*.

Requirement

Review and assess the grantee’s procedures for ensuring that quality control requirements are included within proposals/bids and formally communicated to potential consultants, contractors, and/or subcontractors.

PMOC Assessment

Quality control requirements expected of potential consultants, contractors, and/or subcontractors are clearly defined in Appendix 1, *Contract SP 4.7 Quality Management*. A Quality Plan is to be submitted to grantee within 30 days of receipt of the Notice to Proceed (NTP) and must be reviewed and accepted by the grantee prior to use. The procurement procedures identified in this QMP are acceptable and conform to FTA guidelines.

Requirement

Review the grantee’s procedures for ensuring that procurement documents are reviewed and approved by a designated authority prior to release, with special attention to the review of the grantee’s construction contract documents, including general and special conditions and quality control requirements.

PMOC Assessment

The grantee procurement procedures are identified in Chapter 5, Purchasing, Appendix 7, *Procurement Code 01.4 – Construction Contracts*, and Appendix 8, *Procurement Code 01.5 – Professional Services Contracts*. Language from the design/build contract is included in Appendix 1, *Contract SP 4.7 Quality Management*, which outlines all quality control requirements expected of the design/build team.

Requirement

Review the grantee's requirements for product identification and traceability to be placed in contract documents, where appropriate, for equipment manufacturers or others supplying products for the project.

PMOC Assessment

Requirements for product identification and traceability are included in Chapter 9, *Products Identification and Traceability*. Identification requirements will be determined during the development of the specifications and design drawings by the consultants. The Deputy Chief Officer of Engineering and Construction (DEC) will assure that verification of identification and control of materials, parts, and components are performed during the design, construction, and testing. However, the process by which the DEC will verify is not identified.

Requirement

Review and assess the adequacy of the grantee's requirements for product identification and traceability for products and materials turned over to the owner at project conclusion.

PMOC Assessment

The QMP does not contain any requirements for product identification and traceability for products and materials turned over to the owner at the project conclusion. However, upon review of a recent Design/Build/Operate/Maintain (DBOM) contract, language was included in the Technical Provisions that states the following:

“At the termination of the Work, the Core Systems Contractor shall deliver to the grantee all copies of all manuals, drawings, computer programs, procedures, records, tools, equipment, and testing devices that the Core Systems Contractor has used to maintain the System equipment, facilities, and subsystems.”

PMOC Assessment of Procurement

The PMOC finds that this QMP provides the information necessary to understand the grantee's document control objectives and is acceptable to advance the project into Final Design.

5.1.5 Construction/Inspection

Requirement

Review and assess the adequacy of the grantee's requirements for a quality control inspection and testing program through all phases of the work, including inspection and testing procedures for special processes and requirements for calibration and maintenance of inspection, measuring, and/or test equipment.

PMOC Assessment

Requirements for the grantee's inspection and testing program, including special processes, are identified in Chapter 10, *Process Control*, Chapter 11, *Inspection*, and Chapter 12, *Testing*. Chapter 13, *Inspection, Measuring and Test Equipment*, includes the requirements for calibration and maintenance of inspection, measuring, and test equipment. The inspection and test procedures identified in this QMP are acceptable and conform to FTA guidelines.

Requirement

Ensure that the grantee's QA/QC plan adequately indicates and describes the types of inspection and testing required and the standards to be met and provides reference to such testing and standards requirements within the project specifications.

PMOC Assessment

As identified in Chapter 12, *Testing*, and Chapter 13, *Inspection, Measuring and Test Equipment*, the QMP requires that the DEC provide the inspection and test requirements that will be performed by contractors, suppliers, GEC, and/or Construction Engineering and Inspection (CE&I) firms. These requirements are to be included in the procurement documents and contracts. The contractors and/or suppliers are responsible for the control of all measuring and testing equipment in accordance with their grantee-approved QAP.

Requirement

Review and assess the adequacy of the grantee's procedures for handling nonconforming work. Verify that such procedures define responsibilities and/or conditions that would cause work to stop and documentation procedures to record nonconforming work. Review and assess the adequacy of the grantee's procedures for taking corrective action.

PMOC Assessment

The procedures for handling nonconforming work are identified in Chapter 16, *Nonconformance*. Corrective action procedures are defined in Chapter 17, *Corrective Action*. Both the nonconformance and corrective action procedures identified in this QMP are acceptable and conform to FTA guidelines.

PMOC Assessment of Construction/Inspection

The PMOC finds that this QMP provides the information necessary to understand the grantee's document control objectives and is acceptable to advance the project into Final Design.

5.1.6 Operations, Startup, and Testing

Requirement

Review and assess the adequacy of the grantee's control procedures for the testing of systems, vehicles, and service equipment, as well as the grantee's training procedures for operation and maintenance to ensure a smooth transition to operations.

PMOC Assessment

The Core Systems Design/Build Contract will establish the control procedures for the testing of systems, vehicles, and service equipment. As of this review, the Core Systems Contract had not

been awarded. Training procedures are identified in Chapter 20, *Training*. The procedures included in this QMP are acceptable and conform to FTA guidelines. The QMP requires that all consultants, contractors, and suppliers include training requirements in each of the respective QAPs submitted and approved by the grantee.

Requirement

Confirm that the grantee has in place adequate quality assurance procedures to ensure successful implementation of the training program.

PMOC Assessment

Documentation for the training program is identified in Chapter 20, *Training*, with details included in Appendix 11, *Training Procedure (No. 2 PA-07)*. Appendix 11 also contains a sample log indicating how training will be documented and tracked. The QMP requires that all consultants, contractors, and suppliers include training requirements in each of the respective QAPs submitted and approved by the grantee.

PMOC Assessment of Operations, Startup, and Testing

The PMOC finds that this QMP provides the information necessary to understand the grantee's document control objectives and is acceptable to advance the project into Final Design.

5.2 FTA References

The following are the principal references to Federal legislation, regulations, and guidance with which the PMOC should review and develop a solid understanding as related to the grantee's QMP being reviewed under OP 24:

- Legislative
 - The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, or SAFETEA-LU, P.L. 109-59
- United States Code
 - FTA statutes, 49 U.S.C. Chapter 53
- Regulations
 - Project Management Oversight, 49 C.F.R. Part 633
- FTA Circulars
 - C5200.1A, Full-Funding Grant Agreements Guidance, 12-05-02
- Guidance
 - FTA's Quality Assurance/Quality Control Guidelines, 2002 update

5.3 Conclusion

The PMOC recommends the QMP Revision 0, dated January 11, 2011 be accepted as a deliverable for entering Final Design.

5.4 Recommendations

There are no recommendation conditions that need to be addressed by the grantee prior to entry into Final Design phase.

The PMOC recommends the following items be addressed during the next update of the QMP, which can be developed during Final Design:

- (1) Clarification should be added to the QMP regarding the utilization and maintenance of the “Review Comments Log” and the “Change Management Log” with respect to tracking design changes.
- (2) The “Project Wide Document Control Procedure” should reference and apply to all documents for the Project, not just those documents required in the QMP.
- (3) The QMP should define the process by which the Deputy Chief Project Officer of Engineering and Construction (DEC) will verify that the identification and control of materials, parts, and components are performed during design, construction, and testing.
- (4) The grantee should add requirements to the QMP regarding products and materials that will be turned over to the owner at the conclusion of the project.

APPENDICES

Appendix A: List of Acronyms

AA	▪ Alternatives Analysis
AC	▪ Alternating Current
ADA	▪ Americans with Disabilities Act
AHJV	▪ Ansaldo Honolulu Joint Venture
ATC	▪ Alternative Technical Concept
ATO	▪ Automatic Train Operation
BCE	▪ Base Cost Estimate
BFMP	▪ Bus Fleet Management Plan
BWS	▪ Board of Water Supply
CAC	▪ Citizen Advisory Committee
CCTV	▪ Closed Circuit Television
CDC	▪ Compendium of Design Criteria
CE&I	▪ Construction Engineering and Inspection
CFR	▪ Code of Federal Regulations
CMP	▪ Construction Management Plan
CRE	▪ Contract Resident Engineer
CSC	▪ Core Systems Contract
DB	▪ Design-Build
DBB	▪ Design-Bid-Build
DBOM	▪ Design-Build-Operate-Maintain
DC	▪ Direct Current
DCS	▪ Department of Customer Service
DEC	▪ Deputy Chief Officer of Engineering and Construction
DOT	▪ United States Department of Transportation
DPP	▪ Department of Planning and Permitting
DTS	▪ Department of Transportation Services
EDC	▪ Engineering Design Consultant
FAA	▪ Federal Aviation Administration
FD	▪ Final Design
FEIS	▪ Final Environmental Impact Statement
FFGA	▪ Full Funding Grant Agreement
FHWA	▪ Federal Highway Administration
FTA	▪ Federal Transit Administration
GEC	▪ General Engineering Consultant
GET	▪ General Excise Tax
HART	▪ Honolulu Authority for Rapid Transportation
HDOT	▪ Hawaii Department of Transportation
HHCTC	▪ Honolulu High Capacity Transit Corridor Project
LONP	▪ Letter of No Prejudice
LPA	▪ Locally Preferred Alternative
MOS	▪ Minimum Operating Segment
mph	▪ Miles Per Hour
MPO	▪ Metropolitan Planning Office
MPS	▪ Master Project Schedule
MSF	▪ Maintenance and Storage Facility
MW	▪ Megawatt
NEPA	▪ National Environmental Policy Act
OBS	▪ Organizational Breakdown Structure
OCC	▪ Operations Control Center
OP	▪ Oversight Procedure
PA	▪ Programmatic Agreement

PB	▪ Parsons Brinckerhoff
PCM	▪ Project Controls Manager
PCO	▪ Procurement/Contract Officer
PE	▪ Preliminary Engineering
PIO	▪ Public Information Officer
PLA	▪ Project Labor Agreement
PMC	▪ Project Management Consultant
PMOC	▪ Project Management Oversight Contractor
PMP	▪ Project Management Plan
PTD	▪ Public Transit Division
QA/QC	▪ Quality Assurance/Quality Control
QAM	▪ Quality Assurance Manager
QAP	▪ Quality Assurance Plan
QMP	▪ Quality Management Plan
RAM	▪ Responsibility Assignment Matrix
RAMP	▪ Real Estate Acquisition and Management Plan
RAP	▪ Rail Activation Plan
RFMP	▪ Rail Fleet Management Plan
RFP	▪ Request for Proposals
RFQ	▪ Request for Qualifications
ROD	▪ Record of Decision
ROW	▪ Right-of-Way
RSD	▪ Revenue Service Date
RTD	▪ Rapid Transit Division
SAFETEA-LU	▪ Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SCC	▪ Standard Cost Category
SITP	▪ System Integration Test Plan
SOA	▪ State Oversight Agency
SOA	▪ State Oversight Agency
SSCP	▪ Safety and Security Certification Plan
SSMP	▪ Safety and Security Management Plan
SSPS	▪ System Safety Program Plan Standard
TCRP	▪ Transit Cooperative Research Program
UH	▪ University of Hawaii
US	▪ United States of America
USC	▪ United States Code
USC	▪ United States Code
USDOD	▪ United States Department of Defense
USDOT	▪ United States Department of Transportation
WBS	▪ Work Breakdown Structure
YOE	▪ Year of Expenditure

Appendix B: Documents Reviewed

Document	Revision	Date
Final Environmental Impact Statement (FEIS)	-	25-Jun-11
Programmatic Agreement (PA)	-	18-Jan-11
Record of Decision (ROD)	-	18-Jan-11
Project Management Plan (PMP)	4	01-Apr-11
Quality Management Plan (QMP)	0	01-Jan-11
Real Estate Acquisition and Management Plan (RAMP)	4	21-Dec-10
Bus Fleet Management Plan (BFMP)	2	Jun-10
Rail Fleet Management Plan (RFMP)	0	06-Apr-11
Safety and Security Management Plan (SSMP)	2	01-Jun-11
Safety and Security Certification Plan (SSCP)	1	01-Jun-11
Configuration Management Plan	0	23-Dec-10
Staffing Plan	3	11-Mar-11
Operating Plan		06-Apr-11
Force Account Plan	0	21-Jan-11
Mitigation Monitoring Program	0	18-Feb-11
Interface Management Plan	0	29-Mar-11
Contract Packaging Plan	2	09-Mar-11
Claims Avoidance Plan	0	06-Apr-11
Construction Management Plan (CMP)	0	01-Jun-11
1.PP-02 – Procedure Development Process	0	16-Mar-11
1.PP-03 – Standard Terms, definitions, and Acronyms	0	26-May-11
1.PP-04– Baseline Documents Revision and Control	0	14-Jun-11
2.PA-01 – Security Sensitive Information (SSI)	0	26-May-11
2.PA-02 – Procurement Control	0	19-May-11
2.PA-03 – Email Management	0	05-May-11
2.PA- 04- Project Wide Document Control	0	26-May-11
2.PA-05 – Project Library	0	05-May-11
2.PA-06 – Community Relations and Media Contacts	0	16-Mar-11
2.PA-07 – RTD Training Procedure	0	26-May-11
3.PM-01 – Contract Management System	0	16-Mar-11
3.PM-04 – Public Information Communication	0	16-Mar-11
3.PM-05 Meeting/Minutes	0	16-Mar-11
4.PC-04 – Project Management Control	0	30-Jun-11
4.PC-03 – Project Progress Reports	0	16-Mar-11
4.PC-04 – Program Scheduling	0	30-Jun-11
4.PC-05 – Project Accounting	0	26-May-11
4.PC-06 – Cost Estimating	0	05-May-11
4.PC-07 – Cost Control	0	05-May-11
4.PC-08 – Risk Management	0	26-May-11
4.PC-09 – Contingency Management	0	16-Mar-11
5.CA-01 – Contract Administration	0	26-May-11
5.CA-02 – Contract Change Management	0	16-Mar-11
5.CA-03 – Contractor Progress Payments	0	16-Mar-11
5.CA-04 – Contractor Progress Reports	0	08-Apr-11
5.CA-05 – Contract Change Orders	0	16-Mar-11
5.CA-06 – Contract Closeout	0	16-Mar-11
5.CA-07 – Claims and Disputes Resolution	0	05-May-11
6.CM-01 – Submittal Procedure	0	05-May-11
6.CM-02 – RFI Procedure	0	18-Apr-11
6.CM-03 – RFC Procedure	0	16-Mar-11
6.CM-05 – Interface Management and Coordination Procedure	0	26-May-11